



Kevin McPherson  
Publisher, Computerworld

Phone: (508) 820-8130  
Internet: kevin\_mcperson@cw.com

*Kevin W. McPherson*

## Online Insight '96

Held April 9 in Santa Clara  
and April 10 in San Francisco

Hosted by Val Landi, publisher and general manager of @Computerworld (Computerworld's Web site), Online Insight '96 brought together David Carlick, executive vice president of Poppe Tyson, Kevin Doerr, director of sales at I/Pro and attendees from Northern California's media and vendor community to discuss buying, selling, measuring and positioning on the Internet. This truly is a brave new world in which real-time marketing rules the day, but one which currently has no well defined guidelines and standards. The Online Insight '96 series explores the ways all of us — IT vendors, their ad agencies and media companies such as Computerworld, Inc. — have to use an "out of the box" approach in marketing and selling in this medium.

**Online Insight '96** — a presentation and discussion forum hosted by @Computerworld on the issues surrounding the compelling and confounding Internet universe

**The Computerworld Smithsonian Awards Program** — an alliance between the Smithsonian Institution, Computerworld and the IT industry (page 2 of this wrap)

Using Computerworld Inc.'s Information Management Division's **VAR Database** to understand your channels of distribution (page 3 of this wrap)

## Building Customer Traffic:

How content and advertising can work on the WWW

Dave Carlick of Poppe Tyson presented several key points focusing on site content and advertising that successfully turns visitors into customers:

- **Building an application-driven, service-based site** — time-efficient services that compel prospective customers to visit your site (Federal Express's package routing customer support program and Gateway Computers "product spec" application that gives IS customers final pricing, delivery, etc. based on customized queries they key in).
- **The tools used to build the site are critical** — from Web servers to software development, as this medium has users in an "experiencing," rather than viewing mode.
- **Advertising content should elicit immediate user activity** — again, focus on a service-based message both in banner advertising and customized opportunities you buy at other sites.
- **Online will, for the first time in advertising history, bring together all ad agency disciplines** — from print, radio and broadcast, to direct mail and event marketing as agency media teams work with Web site building and creative teams — an opportunity to really help build the client's business.

## Measuring Success:

Are there any standards right now?

Kevin Doerr of I/Pro defined what may be one of the most critical issues in measuring online ROI when he remarked, "so much data, so little information about what's really happening." Standards of measurement are emerging, but again, this is a new paradigm that calls for different approaches by companies such as I/Pro. Kevin discussed many of the underlying market forces and challenges that create this new paradigm of measurement and verification:

- **1994-95 a period of trial and error for measuring Web activity** — 1996 is fast ushering in standards of measurement for Web media buyers who urgently need third party verification.
- **Challenges involved in measuring Web activity** — extremely fast technological change that makes it difficult to employ one methodology over a period of time; defining and setting comparability and standards; measuring an extremely broad demographic base, due to the Net's global reach, and security issues such as firewalls and Proxy services that can inhibit accurate measurement of a site.
- **Third party verification sources such as I/Pro can design and provide the tools for measurement** — the standards of value/quality still must be defined and universally adopted.

If you are interested in learning more about the Online Insight forums held last month, contact Val Landi, publisher and general manager of @Computerworld. He can be reached at (415) 676-3001 or by e-mail, val\_landi@cw.com

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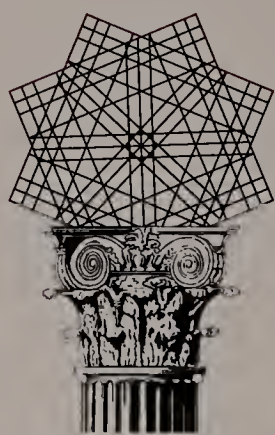


# The Computerworld Smithsonian Awards Program

## Recording the Information Age Revolution

Founded in 1989 as an alliance between the Smithsonian Institution, Computerworld and the Information Technology (IT) industry, the Computerworld Smithsonian Awards Program annually honors the men, women and organizations using information technology to produce positive change in all areas of human experience.

The transition from Industrial Age to Information Age is already being written into the history books.



search for  
new heroes

The Computerworld Smithsonian Awards Program provides the Smithsonian Institution with a number of important resources to capture the history of a revolution in progress.

Nominees, recommended to the Smithsonian by the chairmen of leading IT companies, submit case studies and other materials that are accorded a permanent place in history in the Smithsonian Institution's National Information Technology Archive. This permanent collection provides essential documentation on the impact of information technology, for both today's students and future generations.

Photo by Tom Lippert



Awards Dinner at the National Building Museum

## 1996 Computerworld Smithsonian Awards Program

### Computerworld Smithsonian Awards Dinner

June 3 • Washington, D.C.

An annual black tie gala held at the National Building Museum  
Cocktail reception hosted by Kevin McPherson, Publisher of Computerworld

Master of Ceremonies: *Scott Simon*, National Public Radio

Ceremony Hosts: *Spencer K. Crew*, Director, National Museum of American History  
*Patrick J. McGovern*, Chairman of the Board, International Data Group  
*Gary J. Beach*, CEO and President, Computerworld, Inc.  
*Dr. David Allison*, Chairman, Division of Computers, Information & Society, National Museum of American History

### Symposia: Technology in Education

June 3 • Washington, D.C.

Made possible by an ongoing working alliance between the Smithsonian and Zenith Data Systems

### Monticello Memoirs

April 29 - May 1 • Charlottesville, Virginia

Premiering in 1996, the Monticello Memoirs bring together leaders of the IT revolution for reflection and discussion at Thomas Jefferson's Monticello in Charlottesville. There, in private conversations and in public discussions at the nearby University of Virginia, these men and women will be asked to consider, for the record, their roles in this revolution that is changing the world, their current activities and their vision of the future.

This five-year program is made possible by a working alliance between the Smithsonian, Price Waterhouse and Novell, Inc. The second meeting in this ground-breaking series of discussions will take place in France and bring together European leaders of the revolution. In succeeding years, the program will extend its reach to key leadership figures around the globe.

The discussions, both public and private, will be recorded and held in trust for future generations, as part of the Smithsonian Institution's Permanent Collection on information technology and society.

### Formal Presentation of the Computerworld Smithsonian Innovation Collection to the Smithsonian Institution

June 4 • Washington, D.C.

On the first Tuesday in June, the materials submitted by the year's nominees officially become part of the Smithsonian Institution's National Information Technology Archive. At a breakfast ceremony held in Washington, D.C., the Computerworld Smithsonian Awards Chairmen's Committee formally presents the year's collection of innovation to the Institution for inclusion in the Archive. This select group of innovators is further recognized for their outstanding achievements by the presentation of Innovator's Medals.



To learn more about the Computerworld Smithsonian Awards Program, visit the Innovation Network on the World Wide Web:

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# COMPUTERWORLD



## Lawman online

Investigator Frank Clark works the dark side of cyberspace, tracking counterfeiters, child pornographers and murderers

In Depth, page 99

## Amdahl joins in NT server race

By Michael Goldberg

Mainframe maker Amdahl Corp. will enter the New World Order May 15 when it vaults into the Windows NT departmental server business, *Computerworld* has learned.

Slated for delivery this summer,

Amdahl's EnVista servers will use some of the same commodity technologies used by Compaq Computer Corp., Hewlett-Packard Co. and IBM (see chart, page 129).

So why get involved?

Because mainframe users, even if they aren't ready to say sayonara to their System/390s, are demanding smaller computers from the Unix and Microsoft Corp. Windows NT worlds, according to analysts and users. Amdahl already resells SPARC servers from Sun Microsystems, Inc. to satisfy Unix users.

Now it's time for NT.

"What Amdahl is seeing is demand in their customer base to embrace and provide NT solutions," said Jay Bretzmann, an analyst at International Data Corp. in Framingham, Mass. "And Amdahl's view is, 'We can bring some of the data center experience that we have in the large-shop world to the NT space.'"

It was Amdahl's strong customer support heritage that prompted the city of San Antonio to buy a Sun Amdahl, page 129

### WHAT'S INSIDE

- The city of Worcester, Mass., used an unorthodox tactic to win a dispute with Digital. See story, page 6, by Robert Scheier
- Upstart Xylan introduces a LAN switch that does everything but take out the trash. See story, page 10, by Bob Wallace
- IS user groups have fallen on hard times. See stories, page 12, by Craig Stedman, Bob Francis and Thomas Hoffman

Newspaper

## MCI to quadruple backbone capacity

By Bob Wallace

In an effort to cut network congestion and lay the foundation for high-speed multimedia services, MCI Communications Corp. has embarked on a program to quadruple the capacity of its backbone network.

According to documents obtained by *Computerworld*, MCI has begun a far-reaching switching equipment upgrade that will enable the carrier to boost capacity from 2.5G bit/sec. to 10G bit/sec. without the expense of

laying additional fiber.

The technology was developed by MCI and Optical Corporation of America in Marlboro, Mass. OCA is providing MCI with the special multiplexing equipment needed for the upgrade.

As the project is rolled out along major traffic corridors, MCI will be able to offer users more wide-area bandwidth at lower rates, introduce new high-capacity services and provide additional emergency services. MCI, page 15

High-speed networking

## Apple users hang tough

By Lisa Picarille

A week before Gilbert Amelio presents his plan to turn around Apple Computer, Inc., an exclusive *Computerworld* survey of Apple users reveals high levels of support for the company.

Amelio, chairman and CEO, is expected to reveal his fix-it plan in detail at Apple's Worldwide Developer Conference next week in San Jose, Calif. The tightly guarded plan comes on the heels of a \$740 million first-quarter loss, layoffs of 2,800 workers and a recent Dataquest report that shows the company's market share has dropped to an all-time low of 5.8%.

His speech will be a litmus test for the 54% of the 100 Apple users surveyed by *Computerworld* who said they believe Amelio can turn things around at Apple. Only 3% disagreed, and the rest were uncertain.

Although the details are still unknown, sources close to Apple said they expect Amelio to outline how he intends to return Apple to profitability and restore flagging market share. His action plan is expected to recommend creating premium-priced products. Apple, page 129

How confident are you that Apple can continue to provide the technology necessary to keep the Macintosh in corporate accounts?



BASE: 100 APPLE USERS



Philadelphia's John Carrow is adding year 2000 compliance to contracts

## Small vendors pressed for year 2000 remedy

By Thomas Hoffman and Julia King

Like other organizations with lots of legacy code, the city of Philadelphia is auditing its software systems to determine what it will take to make them read year 2000 dates.

In the meantime, the city is spelling out in all new contracts that third-party vendors must offer systems that don't confuse the year 2000 with the year 1900, said Chief Information Officer John Carrow.

The trouble is, it might be too little too late for the City of Brotherly Love.

Most software licenses don't obligate software vendors to Year 2000, page 16



## News

## NEWS

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Corporate PC buyers want to pick which applications are bundled with their purchases.
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- 130 NDS porting**  
The shifting landscape leaves Novell's directory services porting effort an exercise in futility, Charles Babcock says.

COMPUTERWORLD'S

**TechnoTrivia**

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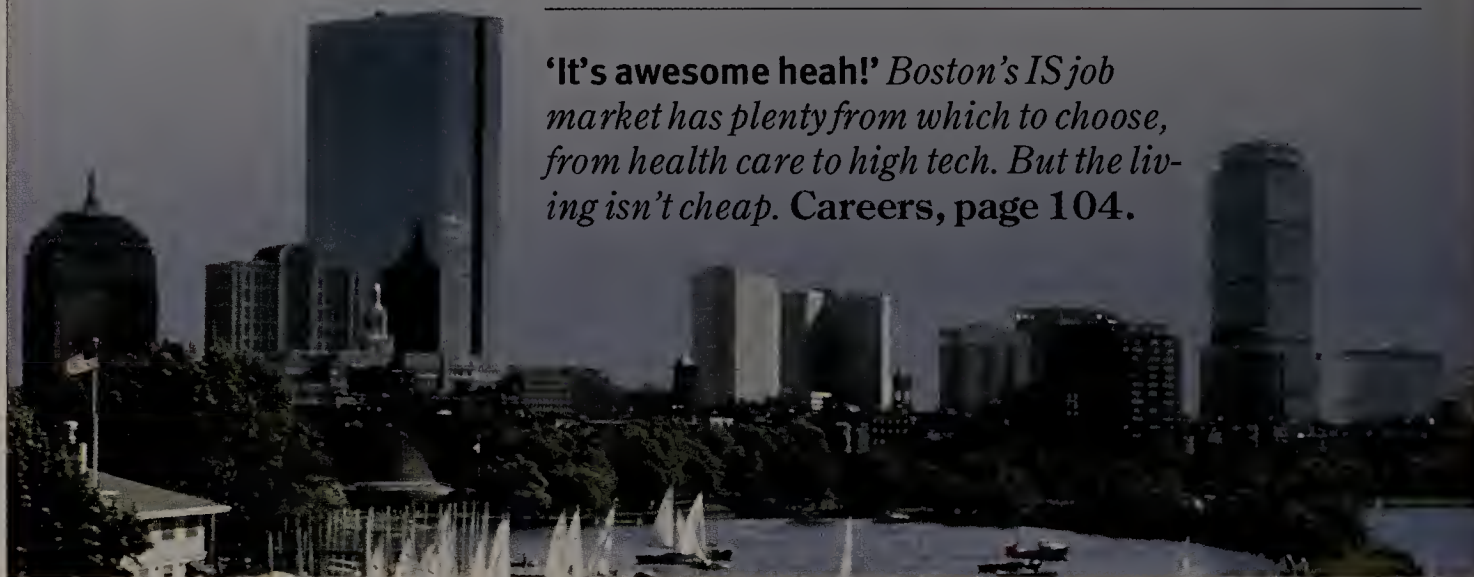
See page 48 for  
"everything you need to know to win!"

## Choice Cuts

**Business Berlitz-krieg.** CEOs often knock CIOs for financial illiteracy. But Dataserv CIO Byron Baker (right) found a friend, Treasurer Michael Woodard, to help him learn the language of business. **Managing, page 92.**



**'It's awesome heah!' Boston's IS job market has plenty from which to choose, from health care to high tech. But the living isn't cheap. **Careers, page 104.****



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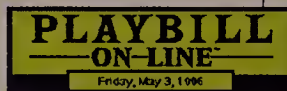
- 55 NT scalability**  
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- 58 Soft-Switch switch**  
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- 62 Reusing objects: It ain't easy**  
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By supporting a new protocol, Novell links its NetWare Directory Services to the Internet.
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# City to DEC: Shape up or we run this ad

By Robert L. Scheier

It's a CIO's fantasy: Fed up with delays in a vital systems integration project, you tell the vendor to shape up or you'll run an ad publicly airing your complaint.

Worcester, Mass., Mayor Raymond Mariano did just that last month in the midst of a dispute with his neighbor and systems vendor, Digital Equipment Corp. Once Digital officials entered City Hall to see a mock-up of the ad propped on an easel, they agreed to pay the city \$33,000 a month to maintain its existing applications while Digital tries to finish the new ones.

Digital also took other steps, such as placing a developer on-site, which left Mariano "hopeful" that the system, delayed for 10 months, could be completed by the end of June.

At issue are a series of tax processing applications that must be online before the city can unplug

its aging Honeywell, Inc.-Groupe Bull mainframe. They are the only unfinished pieces of a \$7 million, three-year contract with Digital to move the city's previous hodgepodge of systems to Alpha servers running VMS and Unix.

"My frustration was that [city officials] weren't getting corporate attention for this problem," said Mariano, who runs a marketing and management consulting firm in addition to his official duties.

"I understand how important corporate image is to a company. I suggested that if we could not get the proper people to pay attention to the problems, that we communicate our displeasure to other mayors and other managers around the country."

It wasn't a question of only the \$33,000 per month it takes to keep the old system running, Mariano said. "Without this [new system], we continually waste resources."

You can't fight city hall...

...not when it's prepared to run an ad like this, the brainchild of Worcester, Mass., Mayor Raymond Mariano. The city dropped its plans to run the ad after Digital agreed to compensate it for extra costs the city will incur while the company completes the overdue system.

When asked what delayed the project, a Digital official said one factor was that "there have been a lot of change requests" from the city, including one in November 1994 to replace the vendor who was providing the finan-

THE WALL STREET JOURNAL

Hey, Digital... it's still not working!

After months of continued failure and hundreds of thousands of dollars in unanticipated costs, the City of Worcester still doesn't have the capabilities required in its RFP.

Raymond V. Mariano Mayor Thomas R. Hoover City Manager

pletion date "a very, very high-risk date," said Paul Bresnahan, a customer program manager at Digital in Shrewsbury, Mass.

"The city didn't ask for a change in vendors because they were just in the mood to change," Mariano shot back. "We weren't getting the service necessary to get the system up and moving. The vendor is the responsibility of the contractor [Digital]. Had the original vendor done the job ... there would have been no request for a change."

Digital officials denied that the ad motivated the payments to the city. "That did not drive our thinking," said Ann Hurd, state and local government relations manager at Digital in Maynard, Mass. "It's primarily ensuring that the customer is satisfied."

Mariano insisted the ad wasn't a threat but "simply a method to get their attention." Did it work? "They seem to be fully focused," he said.

## Pentium Pro PCs pack NT, move in on workstations

By Craig Stedman

PC systems based on the Windows NT operating system and Pentium Pro chips are starting to worm their way into engineering and design applications previously reserved for Unix workstations.

Pentium Pro systems should begin to pose a greater threat to Unix desktops late this year and into next year, as more technical software becomes available on Microsoft Corp.'s Windows NT.

This marks the first batch of PCs powerful enough to target the heart of the workstation market, although they are doing so "in a spotty sort of way" for now, said Tom Copeland, an analyst at International Data Corp. in Framingham, Mass.

Windows NT still doesn't support many of the applications workstation users rely on. And Intel Corp.'s Pentium Pro so far can't match RISC microprocessors on floating-point speed or I/O.

But half a dozen users last week agreed that the new breed of Pentium Pro systems that emerged in the last six months will give the PC approach — with its price and convenience benefits — a better chance to compete against Unix machines.

"If I/O is a factor, you can't go cheap. But for things that aren't heavily I/O-bound, a Pentium Pro is much more cost-effective," said David Pensak, a senior research fellow at Du Pont Co. in Wilmington, Del. Du Pont's computer sciences research group

started buying Pentium Pro-based systems two months ago for use in basic research alongside its Unix workstations.

The Pentium Pro boxes cost less than \$6,000; a comparably equipped Unix machine, such as Sun Microsystems, Inc.'s Ultra 1, would cost more than twice as much, Pensak said. But Pentium Pro hardware provides only about 70% of the CPU power and 40% of the I/O capacity of an Ultra 1, he said. If Intel can do better in the future, "then life [will] get real interesting" for Unix vendors, he said.

### Workstations

Preliminary 1995 workstation shipment figures from Dataquest in San Jose, Calif., show small market share drops for the Top 5 Unix vendors except Silicon Graphics, Inc. (SGI). Meanwhile, the "other" category grew from 15.5% in 1994 to 19.1% last year, due to the gains made by makers of Sun SPARC clones and Windows NT-based systems.

"We're seeing a lot of interest [in Pentium Pro hardware] from our clients. Everybody is asking questions," said Greg Weiss, a workstation analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y. "But software is what people are waiting for."

Because of the limited application support, users who run multiple programs on workstations may not be able to even consider a Pentium Pro box, Copeland pointed out. The machines are attractive mainly to small departments or companies that want a price break and ease of use, he said.

### Targeting Unix

Workstations based on Windows NT and the Pentium Pro, such as Netpower's Calisto (in photo), have the following advantages and drawbacks



#### Advantages

Prices can be as much as 50% less than Unix workstations

Users can run design applications and PC software on the same box

No learning curve required for users familiar with Windows

#### Drawbacks

Floating-point performance is about half that of Unix systems

Key technical applications aren't yet ported to Windows NT

Better high-end graphics capabilities are needed

Dan Minarik, principal mechanical engineer at Barnant Co., a maker of lab instruments and pumps in Barrington, Ill., used to share time on a Unix workstation. "But I wanted something that would handle CAD software and also let me keep my normal Windows environment," he said.

Minarik has used a Windows NT-based machine made by Intergraph Corp. since January. The Pentium Pro hardware "seems a little bit slower" on design applications than the Unix workstations at Barnant, "but it's certainly good enough for what I need to do," he said.

Pentium Pro systems set up as workstations with three-dimensional graphics are available from vendors such as Intergraph, Digital Equipment Corp. and Netpower, Inc. The machines, which provide much better performance than earlier NT models based on the 486 and Pentium chips, are

finding an especially inviting niche in the computer animation industry.

The Vancouver Film School in British Columbia is buying 50 Netpower systems for one-half to two-thirds what it would have cost to expand an installed base of SGI's Unix workstations, said Graham Gish, program director for animation and digital effects at the school. "SGI's really going to have to come to the plate," he said.

An SGI spokeswoman said its graphics and animation strongholds are under increasing attack from Pentium Pro machines. "But a lot of times, those are being compared against our older systems," she said.

SGI in January quadrupled the performance of its entry-level Indigo2 graphics workstation and also cut pricing. New machines with a faster processor that is supposed to double throughput again are due to ship this month.





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# Fast Ethernet takes slow ride to desktop

By Bob Wallace

Fast Ethernet may be spreading like kudzu through backbone networks, but the technology needs to scale some serious barriers before it reaches the desktop.

The more formidable of these include high prices for hubs and a lack of demanding data applications that require the speedy 100M bit/sec. LAN transmission technology.

"Fast Ethernet to the desktop is definitely an option, but we really need to first see applications that need that much capacity emerge and vendors dropping the price per port on hubs, which is high," said Mark Maxwell, vice president of global systems management at

Fuji Capital Markets Corp. in New York.

Fuji uses switched Ethernet to the desktop and Fast Ethernet to its servers, but there are no immediate plans to extend the latter technology to the desktop, Maxwell added.

Another user echoed that hesitation.

"We've been using the technology to centralize our many Novell servers to provide users [with] a much higher-speed pipe to the applications that run on them," said a network manager at a large Northeast insurance company, who requested anonymity. "I think at some point — maybe three years from now — we'll extend Fast Ethernet to the desktop. But for now, Ethernet switching is just fine for our desktops."

Four years after its introduction, Fast Ethernet has won wide acclaim because it lets users boost performance in client/server networks by replacing 10M bit/sec. cards in their servers with the 10/100M bit/sec. Fast Ethernet cards.

And Fast Ethernet can also unclog pipes between switches in backbone networks by providing connections that run 10 times faster. It is cheaper than Fiber

Distributed Data Interface (FDDI) and the far less mature Asynchronous Transfer Mode (ATM) technology.

Although FDDI is used widely, analysts say the technology remains pricey. An FDDI adapter costs about \$1,140, for example, and a Fast Ethernet adapter is about \$200, according to a recent report from Wessels, Arnold & Henderson in Minneapolis.

And recent user surveys from Infonetics Research, Inc. in San Jose, Calif., show many companies planning to use Fast Ethernet backbones while ATM remains barely in the running.

Although vendors are trying to spur deployment by pricing the 10/100M bit/sec. cards at about twice the price of regular Ether-

net 10M bit/sec. cards, information systems managers have been reluctant to extend the technology broadly to users.

"We have 10/100M bit/sec. cards in hundreds of desktop computers, but we're waiting for the price of Fast Ethernet hubs to come down from about \$160 per port to about \$80 per port," said Rob Roush, a senior systems engineer at Integra Health in Des Moines, Iowa. "That could very well happen in the fall."

Roush did pick up two of the high-priced hubs last year as part of a pro-

motion by Santa Clara, Calif.-based 3Com Corp., through which users got a free hub with the purchase of every 30 10/100M bit/sec. cards. NetWorth, Inc. in Irving, Texas, and Intel Corp. in Santa Clara followed suit.

"Two thousand dollars [for a Fast Ethernet hub] is pretty much the cost of a new PC for us," Roush pointed out.

Indeed, users have reason to be optimistic on the price front, as vendors trip over themselves to deliver more and cheaper Fast Ethernet products.

Although they wouldn't divulge pricing, officials at Cabletron Systems, Inc. in Rochester, N.H., confirmed the company will announce a raft of internally developed Fast Ethernet products this week, including modules for its midrange MMAC and high-end MMAC-Plus switching hubs. Also on the delivery list are Fast Ethernet models of its high-performance SmartSwitches.

Cisco Systems, Inc. in San Jose, Calif., recently announced a new wave of Fast Ethernet wares, followed by Assante Technologies, Inc. in San Jose and Plaintree Systems, Inc. in Waltham, Mass., last week, to name a few.

## Rising star

Cabletron's actions are indicative of the meteoric rise of Fast Ethernet: Just a few years ago, Cabletron dismissed Fast Ethernet to focus on ATM. But then it did an about-face and earlier this year bought Fast Ethernet pioneer Standard Microsystems Corp.'s switching unit to enter the market.



## Ethernet's energy

U.S. Fast Ethernet revenue

\$44.2M

1995

\*Projected

\$394M

1996\*

\$768M

1997\*

\$1.07B

1998\*

Source: The Dell'Oro Group, Menlo Park, Calif.

Ethernet hubs need not apply. See page 70.

## News Shorts

### NFS storage servers from Sun Microsystems

Sun Microsystems, Inc. next week will introduce a packaged Network File System (NFS) storage server based on its 167-MHz Ultra-SPARC chip, sources said. Despite having created NFS, Sun had left the dedicated NFS file server market to small vendors such as **Auspex Systems, Inc.** and **Network Appliance Corp.** But now it will target the increasing number of departments and workgroups that use NFS to share files and applications across their LANs. Sun's pre-configured Netra NFS 150 includes a World Wide Web browser-based user interface for systems administrators that runs on PC, Macintosh and Unix clients, the sources said. Pricing starts at \$25,295 with 64M bytes of memory and 8.4G bytes of storage capacity.

### Outsourcing win for ISSC

IBM's Integrated Systems Solutions Corp. (ISSC) subsidiary has won one of the biggest outsourcing deals to date, a multibillion-dollar, 10-year outsourcing agreement with **Ameritech Corp.** ISSC will manage Ameritech's data center operations, ongoing consolidation efforts and help desk services. Additionally, ISSC will implement a comprehensive disaster recovery program.

### White flag from McAfee

McAfee Associates, Inc. ended its pursuit of **Cheyenne Software, Inc.** with a whimper, not a bang, last week, withdraw-

ing its \$1 billion offer for the network backup software giant.

McAfee, a LAN management vendor in Santa Clara, Calif., pulled the plug on the increasingly acrimonious takeover attempt but said it was still willing to consider a friendly merger.

### More price cuts from Intel

Intel Corp. in Santa Clara, Calif., will drop prices on its Pentium and Pentium Pro processors this week. Intel will cut its 200-MHz Pentium Pro to \$707, down from \$857. Pentium chips also get a cut, with a

150-MHz Pentium chip dropping to \$364 from \$428. Intel will also introduce a new lower-priced chip set that will reduce the cost of a 200-MHz Pentium Pro desktop PC to about \$3,000, down from \$4,000.

### More losses for AST

AST Research, Inc.'s financial woes seem to be deepening. The Irvine, Calif.-based PC maker last week reported a first-quarter loss of \$115.8 million on revenue of \$530 million. The company blamed falling demand, excess inventory and pricing pressures for the loss. AST has reported losses totalling more than \$400 million over eight consecutive quarters. As a result of its latest losses, AST last week said it will lay off 300 employees, or about 5% of its workforce, as part of a \$15 million restructuring effort.

### Antivirus fix from Symantec

Symantec Corp. in Cupertino, Calif., said it has released a patch to correct a flaw in its Norton Anti Virus '95 (NAV95) software program that can — in certain circumstances — corrupt data on Windows NT file servers. A company spokesperson acknowledged that if the NAV95 package is used to scan the new-style NTFS volumes on Windows NT Server hard disks, it will change the file attributes. This could result in hidden files or, in a worst-case scenario, crash the server.

### Merger for CSC, Continuum

Computer Sciences Corp. (CSC) and The Continuum Co. in Austin, Texas, have agreed to merge in a \$1.5 billion stock swap. The agreement, which was unanimously approved by the boards of both companies, will provide El Segundo, Calif.-based CSC with inroads into the insurance and banking software and services markets.

### Web site software from Lotus

Lotus Development Corp. plans to make available a Notes-based application that helps Notes users create Web sites. Called WebMaster's Apprentice, the software provides templates and smart boxes for users to create a common look and feel across as many pages on the Web site as needed.

### New apps from PeopleSoft

PeopleSoft, Inc. in Pleasanton, Calif., will significantly expand its enterprise software offering when it rolls out its long-awaited manufacturing applications on May 13. The new manufacturing modules are engineering, bills and routing, product management, production planning and cost management. Pricing begins at \$90,000 per module. General availability is scheduled for November.





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End-User OLAP Analysis Tools	<b>Express Analyzer</b>	No	Yes
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# Xylan goes up against switching kingpins

Company's OmniSwitch will support all types

By Bob Wallace

Users soon will be able to get every type of LAN switching in a single box.

Upstart Xylan Corp. this week will an-

nounce wares that will give users what the Big Four — 3Com Corp., Cabletron Systems, Inc., Cisco Systems, Inc. and Bay Networks, Inc. — can't yet offer.

Xylan's OmniSwitch will be able to

support Ethernet, Token Ring, Fast Ethernet, Fiber Distributed Data Interface (FDDI), Copper Distributed Data Interface (CDDI) and Asynchronous Transfer Mode switching.

One large user opted for Xylan over the Big Four after he found that those vendors

made empty promises about Fast Ethernet switching.

Although some of these vendors offer low-end Fast Ethernet hubs, only a few have added Fast Ethernet switching to their high-end hubs.

"Everyone promised Fast Ethernet, but when it came time to deliver, only Xylan had it," said Fred Cook, manager of technology strategy at Van City Savings, a Vancouver, British Columbia, credit union with \$4.3 billion in assets.

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**For information, see ICE on the WWW:**  
**<http://www.idg.com/ice>**  
**or Call 800-667-4ICE (4423)**

### OmniSwitch stats

SWITCHING MODULE	CABLE TYPE	PRICE
12-port Ethernet	Twisted-pair	\$5,450
8-port Ethernet	Fiber	\$6,950
4-port Fast Ethernet	Twisted-pair	\$6,750
8-port Fast Ethernet	Twisted-pair	\$8,950
6-port Token Ring	Fiber	\$10,950
1-port FDDI	Fiber	\$10,950
2-port FDDI	Fiber	\$16,950

"And we absolutely wanted to have all the switching options Xylan has," Cook said. He replaced Kalpana, Inc. and SynOptics Communications, Inc. hubs.

Van City desperately needed Fast Ethernet switching because a large imaging application was bringing the firm's network to its knees. "Our LAN segments were getting hammered [on performance]," Cook recalled.

Analysts said having a breadth of switching options in one box is becoming more desirable.

"LAN decision-making has been pushed out to the departmental level, so you're seeing different groups going with different LAN switching technologies," said Tom Nolle, president of CIMI Corp., a Voorhees, N.J., consultancy. "So to reap the largest benefit from switching, users have to go with a switch that offers the widest array of LAN switching options."

### Addressing the problems

Nolle estimated that the sites experiencing the most significant media congestion are those with FDDI backbone networks.

Xylan can address these growing user needs with its FDDI and CDDI switching.

The company builds high-performance "mini-switches," or application-specific integrated circuits, into its switching modules and loads them with high-speed, top-of-the-line RISC processors.

But does Xylan have a chance against the Big Four switching kingpins?

"Yes, and that's because by supporting all LAN switching options, they can go in to see any IS manager and talk switching without having to worry about what prior LAN technology decisions that manager has made [over the years]," Nolle said.



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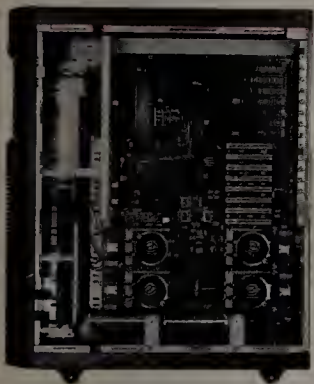
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features, and unequalled expandability, this amazing system is re-defining the PC server's role in today's business world.

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# Quad Pentium Pro multiprocessing. Another first.





# Some user groups battered...

## OURS searches for new members, new focus to battle back

By Craig Stedman

OURS wants to be yours.

After working in relative obscurity the past few years and losing some members, the Open User Recommended Solutions (OURS) group is trying to keep its flame from flickering out.

OURS, which lists 40 members, down from 53 in 1993, last week said it wants to attract new users.

Current membership is split almost equally between users and vendors.

### Target figures

OURS hopes to add 20 to 25 new members this year — primarily users. Its goal is to double its membership by the end of next year.

The group, which develops guidelines for distributed and multivendor computing, is trolling for new members in vertical industries such as retail, manufacturing and insurance. OURS also

is looking to open itself up by marketing its guidelines to nonmembers and by sponsoring a series of technology forums.

OURS is one of the organizations that rushed into the interoperability breach created by open systems.

Stocked with heavyweight companies, the group works through task forces that propose generic frameworks for users and vendors to follow.

It made an early splash with white papers on topics such as software licensing and network management.

But it admittedly grew more inwardly focused.

"There's been an ongoing debate as to whether this

should be an organization for the membership or one that sought a wider influence," said William Strathearn, an OURS board member and former director of information services at Union

Camp Corp. in Wayne, N.J.

Gene Raphaelian, an analyst at Gartner Group, Inc. in Stamford, Conn., who did a client/server job skills study with OURS in 1993, said the group has disappeared from his view since then.

"At the time ... they didn't really know what they wanted to be when they grew up," he said.

Guidelines developed by OURS have been adopted by some members, but the group hasn't cut a wide swath, said Ron Shepherd, vice president of technology planning at The Chase Manhattan Bank Corp. in New York.

"If I'm going to deal with a [vendor] that's not an OURS member, I have to do some jawboning to try to get them to implement this stuff," he said.

The annual membership fee for user companies is \$5,000; vendors pay up to \$30,000.

The Chicago-based group said it's setting up a formal program to make its white papers available to nonmembers at a cost of \$50 each; that will cover materials and distribution.

Upcoming papers will cover subjects such as directory services and mobile computing.



**Chase's Ron Shepherd:** *'We've seen members do things [with OURS guidelines]. We're beginning to realize it would [be] easier for all of us if they were more widespread'*



**International ASM President Ann Purr:** *'SIM is the only organization we went to'*

## SIM offers to scoop up ASM members

By Thomas Hoffman

Even industry user groups are being hit by the downsizing wave.

The Association for Systems Management (ASM) will take a hard look at the future when it convenes for its 49th annual conference this week in Nashville.

Battered by declining enrollment, the Cleveland-based user group has been considering various options for its remaining 3,000 members.

### Calling all members

The Society for Information Management (SIM) last week extended an offer to all ASM members to join its group — as long as they meet SIM criteria as information systems officers at the vice president level or above, according to a spokesman for the Chicago-based group.

That could represent more than 80% of ASM's members, said Ann

Purr, international president of ASM.

SIM "is the only organization we went to," Purr said. "I didn't want to produce a Chinese menu kind of option [for ASM members]."

### The good old days

ASM, composed of IS professionals from programmers to chief information officers, saw its enrollment peak at 8,500 members in the mid-1980s.

Its enrollment has dwindled as corporations have shifted their IS professionals into product- and vendor-specific user

groups, said Wally Francis, director of the New England chapters of ASM.

SIM, which is made up of top-level information technology executives, has grown steadily to 2,700 members since it was conceived in 1968 as the Society for Information Management Systems.

## ... others are beaten, as MMA shuts its doors

By Bob Francis

The Microcomputer Managers Association (MMA) in New York quietly filed for bankruptcy earlier this year following a court judgment of \$85,000 against the organization.

The group probably won't reconstitute itself, said Len Steinbach, an information systems manager in New York and the most recent president of the MMA. "Most members are joining other groups, which are more directly connected with their work, such as multimedia organizations," he said. At its peak, the MMA listed 3,000 members worldwide.

The court action that led to the group's filing for bankruptcy was initiated by Priscilla Tate, a former executive director of the

MMA. Tate, a founder and now director of the Technology Managers Forum (TMF) in New York, said the MMA didn't pay her for work she did at the organization. This prompted her to file for binding arbitration.

The TMF conducts workshops for IS managers.

The MMA was one of the first professional organizations for the PC manager in the early 1980s. PCs were just entering corporations at the time, and many PC managers were new to information processing.

As PCs became standard in the corporate computing landscape, the MMA was able to snare high-profile speakers such as Microsoft Corp. Chairman and CEO Bill Gates and Jim Manzi, then of Lotus Development Corp.

**The judgement that led to the group's filing for bankruptcy was initiated by Priscilla Tate, a former executive director of the MMA.**

## DEC wraps NT in security blanket

By Jaikumar Vijayan

Digital Equipment Corp. is the latest vendor to try to make Windows NT a safer place in which to run mission-critical applications.

Digital next week will announce clustering software for Microsoft Corp.'s Windows NT Server 3.51 and 4.0 that will provide automatic fail-over capabilities. This will let network administrators tie two NT servers together. If one goes down for any reason, the other will automatically take over.

The software, Digital Clusters for Windows NT, is expected to cost about \$1,000 per server. It will run on servers based on Intel Corp. and Digital Alpha processors.

Digital refused to comment on the unannounced product.

"It makes sense to use clustering technology to extend the range of NT systems to reach further into the midrange Unix

server space," said James Garden, an analyst at Technology Business Research, Inc. in Hampton, N.H.

Mike Schoenberger, a vice president of MIS at ANB Investment Management & Trust Co. in Chicago, said, "This is certainly something that adds another piece to the puzzle as far as migrating applications to NT is concerned."

Todd Siefert, a systems manager at Allen-Bradley, Co. in Milwaukee, lauded the built-in redundancy. "After having seen clustering in the VMS space, you miss it when you don't see it in NT," he said.

### Part of the pack

With the announcement, Maynard, Mass.-based Digital joins NCR Corp. and Compaq Computer Corp. in offering NT clustering.

Digital has used clustering technology for years to extend scalability and availability in its

VAX systems. The company is working with Microsoft to develop clustering technology for Windows NT that each company will sell separately.

Digital next week will deliver clustering as a software add-on to NT server; Microsoft is expected to embed it in the kernel of the operating system and may also sell it as a separate product.

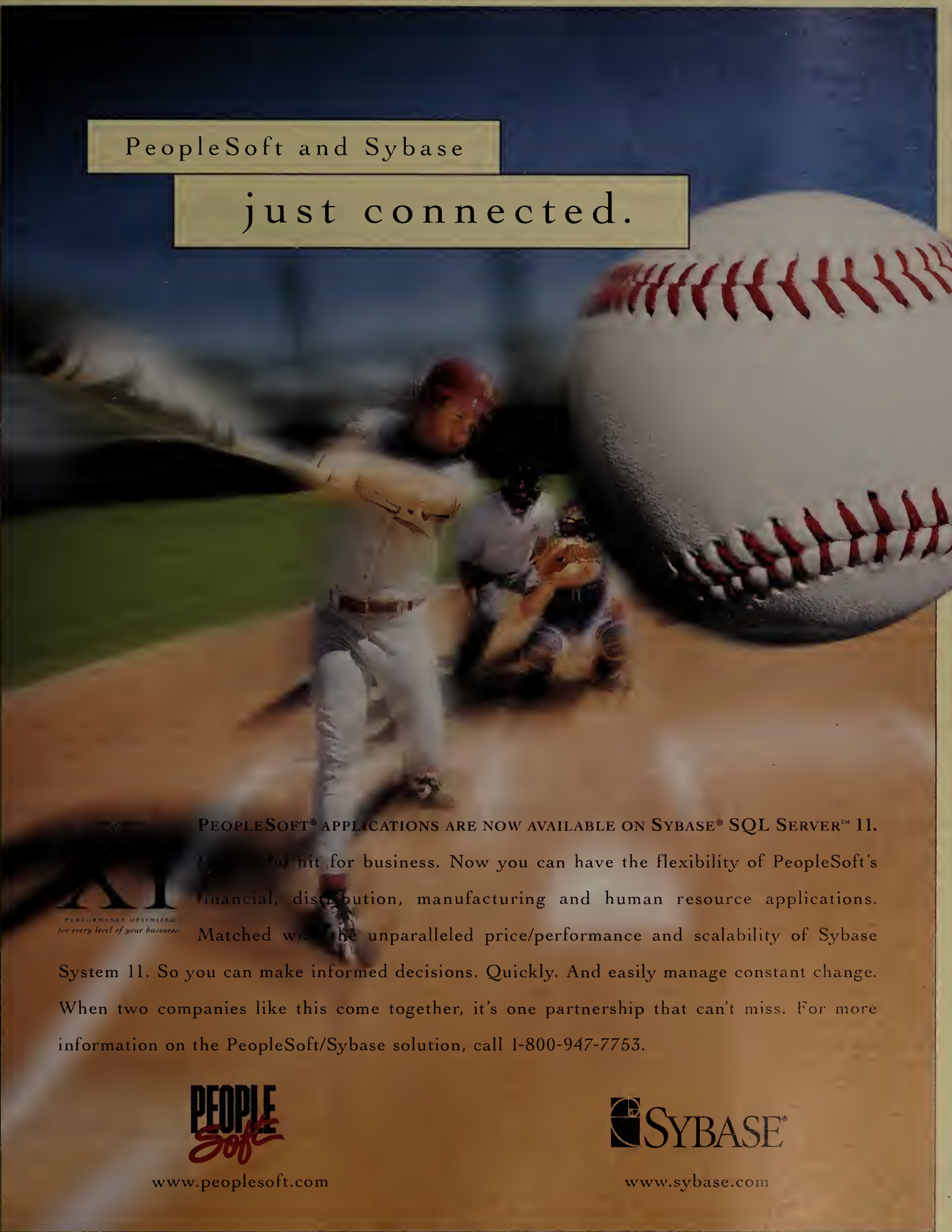
Wolfpack, the initial implementation of Microsoft's NT clustering product, is expected to be available early next year.

Wolfpack will contain elements of Digital's clustering technology.

"You could say that Microsoft is using Digital's blueprint but its own bricks and mortar" to build the product, said Terry Shannon, editor of "Shannon Knows DEC," a newsletter based in Ashland, Mass.

**DEC drills down deeper** into NT. See page 45.





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# Hot showgoers cool toward Java

By Mitch Wagner  
SAN JOSE, CALIF.

The 40,000 hot and sweaty attendees at Internet World '96 here last week weren't interested in Java.

With temperatures soaring into the 90s and air-conditioning systems collapsing under the load, the last thing showgoers wanted to think about was a

hot, steamy cup of joe. Sun Microsystems, Inc.'s Java programming language wasn't a top priority, either.

But information systems managers buttonholed on the show floor were eagerly looking for technology to connect the Internet with mainstream IS technology, including development tools and tools to link the Internet with relational databases and groupware.

"It's essential that we get these kinds of tools as we move beyond static information displays and into true electronic commerce," said Al Norton, who leads the online marketing and electronic commerce effort at 3M in St. Paul, Minn.

Norton said he was looking for vendors to provide electronic data interchange software for the Internet and to strengthen the ability to share information among proprietary groupware and Internet-based applications.

**Corroborating accounts**  
IS consultant Ned McDaniel of Oakland, Calif., agreed. He said he is impressed by the Internet links that Microsoft Corp. is building into its BackOffice products. "They've put some flashy user interface technology on SQL Server," said McDaniel, a programmer at Pacific Telesis Group, the parent company of Pacific Bell.

Donna Matthewson, a user interface design consultant at Cirrus Logic, Inc. in Fremont, Calif., said she was looking for technology to link Cirrus with its suppliers. The company currently distributes copies of its inventory databases to its suppliers, but "having data all over the place like that scares me," she said.

Cirrus instead is considering giving vendors access to a World Wide Web site where they could keep Cirrus informed about orders or problems.

Users at the show also were looking for easy-to-use and powerful development tools — prefera-

bly ones that are compatible with tools they already use.

Corey Shade, an administrator at A1 Rents in San Jose, Calif., said he was looking for basic editors for laying out text and graphics online and editing the Hypertext Markup Language (HTML) used for formatting documents on the Web.

Shade said he was impressed by Adobe Systems, Inc.'s PageMill software, which was developed for that purpose. "I use Illustrator and PageMaker for brochures, and so PageMill is easy because many of the commands are the same. I don't have to mess around with HTML, which is intimidating," he said.

Sean Hansen, systems engineer at Electronic Data Systems Corp. in Rancho Cordova, Calif., said he was looking for development tools compatible with Powersoft Corp.'s PowerBuilder (see related story at right).

Hansen said he is working on an EDS project to build an intranet for internal communications at California's welfare-benefits program.

**What do intranets and client/server have in common?** Hidden costs. See page 37.

## PowerBuilder 5.0 gets 'net support

By Frank Hayes

As corporate developers search for better development tools for the Internet and the World Wide Web, Powersoft Corp. this week will officially unveil a version of PowerBuilder that adds Internet support to the popular visual development system.

PowerBuilder Enterprise 5.0 was designed to let developers split applications between a PC client and a Windows NT- or Unix-based server. Another feature allows it to speed up applications by compiling them to native code, according to Powersoft in Concord, Mass.

The new version costs \$2,995 and will ship by early June for Windows 95 and Windows NT. The company will ship versions for Macintosh and Unix platforms later this year.

### What's to like?

"The application partitioning and cross-platform support is great," said Peter Pollack, vice president of new technologies and architecture at Showtime Networks, Inc. in New York. "It means the business logic of an application can go on the server, or the workstation or wherever you want it, and we plan to take advantage of that."

PowerBuilder isn't the only latecomer to application parti-

tioning. Microsoft Corp. added a rudimentary ability to partition applications to Visual Basic only last fall. Gupta Corp. added partitioning to its SQLWindows this spring and changed the name of the product to Centura.

### New in PowerBuilder 5.0

- Application partitioning for reduced PC client size
- Compiled code for speed
- OLE support for connecting to other Windows applications
- In beta: Web support for application access across the Internet

The revamped PowerBuilder applications require less memory and processor power from PCs for client applications than today's versions. Currently, many "fat clients" built with PowerBuilder, Visual Basic and other development tools require that PCs have fast processors and 16M bytes or more of memory.

Windows applications built with PowerBuilder 5.0 will also support Microsoft's OLE technology. That will give users access to other applications, such as Microsoft Excel spreadsheets and Word documents, from within Power-

Builder applications.

But users said they are also excited about newly announced Internet-oriented features that will be added to PowerBuilder later this year. PowerBuilder DataWindows, which are used for database access, can be converted to plug-ins for Netscape Communications Corp.'s Navigator browser.

Also being tested is the ability to use a Web browser to access a PowerBuilder application that runs on a Web server.

"We're really looking forward to that. We've been using [Web] technology to get to a lot of our users, and this helps solve our application distribution problem," said Raymond Odem, a systems programmer at the Pierce County Information Services Department in Tacoma, Wash.

Web browsers are attractive because they run on many kinds of computers and don't require fully loaded, fat-client PCs, Pollack said. "But what's lacking [in most Web-development tools] is robust forms control. We'd love to use DataWindows to have better control of screens, forms and database access for Web applications," he said.

**Reusing objects isn't easy.** See page 62.

## AT&T gets late start in Web hosting game

By Kim Girard

Playing catch-up with long-distance rival MCI Communications Corp. and Internet service providers, AT&T Corp. is offering Web hosting packages to businesses.

For between \$500 and \$600 per month, AT&T's Easy World Wide Web Services will provide site creation software, hands-on training, access to Web site designers and server space.

### AT&T advantage

Analysts said AT&T is late to the market. But if you are the biggest kid on the block, you don't necessarily have to be the first, said Robert Rosenberg, president of Insight Research Corp. in Livingston, N.J.

"It's clear that AT&T hasn't been the leader here," he said. "The leader has been MCI," which introduced a similar bun-

dled package in March.

But MCI has struggled to deliver the goods on its overburdened network backbone, said Tom L. Nolle, president of CIMI Corp., a telecommunications consultancy in Voorhees, N.J.

"They're now in a position that I think AT&T would rather avoid," he said.

### An easier partner

Renee Loomis, manager of communications technology at the Pennsylvania Chamber of Business and Industry, said AT&T, with its vast resources, has proved easier to work with than her former Internet service provider.

For one, she no longer needs to formulate the Hypertext Markup Language and send it to her provider, which put the copy up on the site. The AT&T system shows her how the copy will look before she posts it directly

### AT&T's virtual storefront package

#### Services and functions:

- Bandwidth capacity on demand.
- Microsoft's FrontPage Web design software to create home pages.
- Access to the staging server, which allows customers to preview and make changes to their Web pages before publishing on the Internet.
- 100M bytes of server storage per month for Web pages.
- Visitors to a Web site can download up to 300M bytes of data per month.

#### Pricing structure

Registration fee: \$1,500

\$500 per month (until June), includes unlimited usage and training

\$600 per month (starting July 1), includes unlimited usage and training\*

\*Excluding customers with AT&T 800 or 888 toll-free numbers — these users will continue to pay \$500 per month plus usage

from her computer.

Price was the deciding factor for Jeffrey Goschen, MIS director and chief information officer at Taney Corp., a national stair builder and parts supplier in Taneytown, Md.

"We researched other companies, and it was cost prohibitive.

We were getting quotes of \$5,000-plus," he said. Using the AT&T network, the company avoided installing extra telephone lines to handle server traffic, investing in a protective firewall and buying a server and support software for the server, he said.



## MCI upgrades

CONTINUED FROM PAGE 1

cy backup capacity.

"What this means to us is that we can get the bandwidth we need to transmit high-quality voice, data and video programming," said Peter Pollack, vice president of new technologies at cable kingpin Showtime Networks, Inc. in New York.

"Bandwidth availability is a critical issue because networks have developed choke points, so it's great to see this type of project. It's a fantastic move," he said.

### Traffic jams

Analysts agreed. "The carriers are facing capacity problems — not networkwide, but on key routes between major cities like New York and Chicago and New York and Boston," said Christine Heckart, director of broadband consulting at TeleChoice, Inc., a consultancy in Verona, N.J. "And the cost of continual overhauls is extremely expensive.

**"We can get the bandwidth we need to transmit high-quality voice, data and video programming."**

*Peter Pollack,  
Showtime Networks*

"For a carrier to find a way to dramatically increase capacity over an existing fiber line is a big development," Heckart added. "Long term, this could result — through competition — in lower cost for users."

The project will also give MCI, which has been installing self-healing fiber rings around major cities, the extra capacity it needs to handle major network outages. "The rings aren't any good if there's nowhere for the traffic to be sent to," Heckart said.

The upgrade should also go a long way toward solving capacity problems that MCI has encountered in trying to satisfy the exploding need for high-speed Internet access.

MCI and UUnet Technologies, Inc. re-

cently announced plans to offer users faster Internet access, but MCI found it couldn't keep up with soaring demand and was forced to turn away users.

In fact, MCI last month upgraded its Internet backbone from 45M bit/sec. to 155M bit/sec.

One of the first applications from the HyperMedia network upgrade is a service for the television broadcast industry, which NBC is testing. With the offering, affiliates

can access video content on demand from servers in the MCI network.

NBC chose the service over its satellite transmission scheme, which is the approach Pollack said Showtime uses today. Showtime said it kept its satellite approach because of the poor video quality of fiber-optic land lines.

The new technology from MCI and OCA is called Four-Wavelength Wave Division Multiplexing and allows a single fiber to ac-

commodate four light signals instead of one by beaming them at separate wavelengths, according to the documents.

The new technology will be implemented in the third quarter of this year on a network route between Washington and Richmond, Va. Other routes will follow, the documents said.



**MasterCard** updates its wide-area network. See page 86.

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# HP streamlines OpenView

By Patrick Dryden

This week, Hewlett-Packard Co. will introduce a simplified version of its OpenView management platform as part of a program to help administrators maintain PC workgroups that rely on HP's Unix servers.

HP isn't challenging the LAN tool vendors. But it is seeking to fill gaps in the end-to-end coverage required by users who run key applications on HP-UX and manage networks and systems via OpenView.

"We need a uniform way to distribute software and care for about 200 departmental workgroups with mixed servers and stations," said Dana Nielsen, director of information technology at Northwestern University in Evanston, Ill. His group monitors the 20,000-user campus network with OpenView's Network Node Manager.

After beta-testing OpenView IT/Administration for Workgroups, Nielsen said this cheaper, simpler package will work well for

## OpenView IT/Administration for Workgroups supports 250 nodes and performs the following functions:

- Software distribution and hardware/software inventory for NetWare, Windows NT and HP-UX servers

- File/print and user management for NetWare and HP-UX servers; Windows NT servers next year

sending software out to diverse LANs. And it will help local managers track users, files and inventory in workgroups that have a mixture of servers, such as Novell, Inc. NetWare, Microsoft Corp. Windows NT and various Unix flavors.

Another OpenView user, who asked to remain anonymous, said he is eager to "bring NetWare and Windows NT server management into the OpenView framework."

HP is trying to ease the coexistence of such PC LANs with its HP-UX systems through a new ef-


fort, the IT Collaboration Program. HP also has promised future integration in areas such as security, messaging and distributed applications.

## Response to IBM

This week's announcements are a defensive maneuver in response to the recent road map from IBM and Tivoli Systems, Inc. for unifying their management products from the host to the workgroup, said Jon Oltsik, an analyst at Forrester Research, Inc. in Cambridge, Mass.

"HP-UX and OpenView users will see this as an extension of what they have, offering more thorough capabilities at a lower level," Oltsik said.

OpenView IT/Administration for Workgroups should ship in August. Prices start at \$2,600 for the management server and \$95 for each copy of the agent software that runs in servers and desktops.

 **Soft-Switch preps** net management ware. See page 58.

# Vendors deliver IS-specific apps over the 'net

By Kim S. Nash and Lisa Picarille

Get ready to buy, rent and upgrade corporate software over the Internet.

Downloading applications and utilities from the global network isn't new, but information systems-specific services attached to several forthcoming programs — such as automatic reminders of when upgrades are needed — are.

Stream International, Inc., a \$1.6 billion software distributor in Westwood, Mass., is expected this week to announce three Internet programs aimed at users who want to buy and maintain business packages with points and clicks.

Stream will offer the following:

- The Internet Software Store, a Java-based World Wide Web site that lets users at large corporate sites purchase software and upgrade applications online.
- Software Store, a package large user companies can license to create internal software distribution servers for end users.
- A technical support site on the Internet, staffed by Stream's 35,000 support workers, that includes access to multiple support databases.

## Resale rules

Meanwhile, Microsoft Corp., the biggest PC software maker, this week will announce terms to which resellers and distributors must adhere to offer its applications on the Internet and online services.

The vendor has devised minimum standards for payment security, customer support and "a decent shopping experience," said Johan Liebgren, director of emerging channels at Microsoft in Redmond, Wash.

"We want to be sure that anyone who is buying Microsoft products is comfortable with the services they receive and how they receive them," Liebgren said.

For example, electronic stores must use a certain level of encryption when handling credit-card transactions and other sensitive data.

Electronic commerce vendors Commerce Direct International, Inc. and Online Interactive, Inc. will announce packages this week that meet Microsoft's criteria, the

firms confirmed last week. They plan to target Ingram, Merisel and other large distributors that want to enter the electronic channel.

## More than meets the eye

This new wave of online software availability goes beyond simply selling code that can be downloaded, analysts and users said.

For example, the tracking of who uses what applications would be automated. Far-flung branch offices would be able to download new applications from a corporate intranet rather than receiving and installing CD-ROM upgrades.

Shipping costs could be cut if software no longer comes in a box via snail mail, said Ken Henley, MIS director at *Outside* magazine in Santa Fe, N.M.

## Digital delivery

**Electronic shipment of corporate applications makes a host of other IS services possible:**

Automatic notification of when it's time to upgrade.

Easier usage tracking.

Virtual bundles of packages that otherwise aren't sold together.

Frequent-buyer programs.

Ease of upgrade is also a big draw, Henley said. He said he would like to see applications automatically prompt end users to grab the latest version of a product from the 'net and "have their software updated before their eyes. This will be an MIS dream come true."

But electronic distribution won't erase all logistics costs.

"Most users will still have the products sent to them rather than downloading massive files," said Jeff Tarter, editor of "Softletter," an industry newsletter in Watertown, Mass.

Even relatively simple applications, such as Netscape Communications Corp.'s 6M-byte Navigator browser, can take 20 minutes or more to download.

Bigger, more complicated word processors, spreadsheets and other packages could take several hours.

# Year 2000

CONTINUED FROM PAGE 1

deliver year 2000 upgrades. And that's a big problem.

Some users can breathe easier now that industry heavyweights IBM, Computer Associates International, Inc. and Dun & Bradstreet Software have agreed to make their software compliant (see timeline). But those at greatest risk are users with software from mom-and-pop shops that may lack the financial wherewithal to meet the millennium deadline.

"There's an impending feeling of doom here" about the ability of smaller vendors to meet the deadline, said Janis Sears, vice president of IS at The Canada Life Assurance Co. in Toronto.

"Why should vendors be any different than us [user companies] in failing to appreciate the enormity of this problem and reacting to it late?" she asked.

Users are taking a variety of approaches.

The Chase Manhattan Bank Corp., which uses 350 third-party applications, is having its legal department add year 2000 compliance language to all new software licenses. But there isn't much the New York-based bank has been able to do about existing licenses. "Right now, we haven't had much

Problem solvers	
Some vendors have taken a proactive stance on the year 2000 problem:	
VENDOR	POLICY
IBM	All its software will be year 2000-compliant by the end of this year.
Computer Associates	More than 80% of its software is year 2000-compliant.
Dun & Bradstreet	Mainframe software users with current maintenance contracts can migrate to its year 2000-compliant releases at no extra cost.

success" with vendors on existing contracts, but every vendor has to be compliant — it's just a matter of when," said Joan Payne, vice president of technology, software and planning at Chase.

Roberts Express, Inc. in Akron, Ohio, has a 1980-ish, minicomputer-based financial system "riddled with year 2000 problems," according to IS director Joe Greulich.

But Greulich said he never considered negotiating with the software vendor. "Our answer is to buy a new version or buy a new financial package," he said. Roberts' IS staff already has rewritten programs that handle core business functions, such as package delivery tracking, he said.

Some companies are looking to industry user groups for answers. For example, Canada Life Assurance has talked with other mem-

bers of the Life Office Management Association about drafting a letter to major software vendors requesting compliance.

Canada Life is outlining a contingency strategy in the event some of its vendors never reach year 2000 compliance. The insurer is considering discarding some software or migrating to a distributed client/server architecture, Sears said. "I don't want to find out in 1999 that a vendor isn't going to be compliant," she said.

Users need to be aware of another potential problem.

Over the next three to four years, 20% of the industry's independent software vendors will go out of business, according to Kevin Schick, research director of applications development technology at Gartner Group, Inc. in Stamford, Conn.



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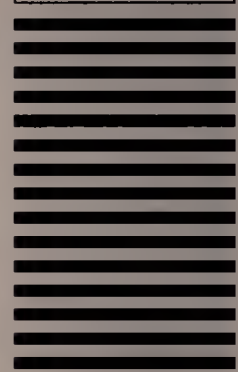
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# Symantec puts Act on Notes stage

By Tim Ouellette

Lotus Notes is getting its act together with contact management applications courtesy of Symantec Corp.

Symantec this week will begin shipping Act for Notes, a Notes-native version of its

popular contact management software.

Act for Notes 4.0 lets users manage their contacts, activities and correspondence in the Notes groupware environment. It runs only under Lotus Development Corp.'s Notes 4.0 and higher, so Notes 3.x users must upgrade to use it.

Sites that have mixed Notes and Act can now meld the applications so users need only one point of access. Current Act users can import all their old data to the Act Notes databases.

"When I heard that Act for Notes was coming out, I said this was the best for both

worlds," said Kevin McGuire, information systems manager at Dale Carnegie Associates, Inc., a developer of training programs in Garden City, N.Y.

The firm's sales force, located in remote offices around the country, chose Act for contact management two years ago, but headquarters wanted users to run Notes for groupware and electronic mail. Now, 1,200 users are on the company's Notes network.

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## Taking your Act on the road

Act provides the following contact management features for some Notes-based sales force automation applications:

- Lead management
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- Contract databases
- Sales forecasting

The move to Notes brings Act from its status as a stand-alone piece of desktop software into the midtier, workgroup arena of sales force automation.

"[Symantec] didn't have an enterprise solution yet with Act," said Judith Hodges, an analyst at International Data Corp. in Framingham, Mass. Developing a Notes-native version of Act was a good choice because many of the estimated 5 million Notes users are salespeople, she said.

As for Lotus, its Notes has lacked a good contact management application.

"There are a lot of shareware contact managers for Notes, but Symantec's Act is far superior," McGuire said.

Lotus is trying to address the basics by adding group calendaring and scheduling features to Notes by midyear.

Symantec product manager Heather Hedin said these general scheduling features wouldn't compete with Act for Notes' more complex and in-depth contact management capabilities.

The full-featured Act for Notes could be used by the sales staff, she said, but other workers at the company who are running only basic Notes scheduling features would be able to access the salespeople's calendar information.

Symantec hasn't just rewritten Act in LotusScript — the Notes 4.0 scripting language — to run native in Notes; it has also beefed up some of Act's features.

Act now offers a full company record format beyond the usual customer files users can create, and users can also assign tasks to workgroup members, taking advantage of Notes' workflow features.

But because Act for Notes runs only on Notes 4.x, McGuire said his firm, like other Macintosh users, has had to wait for the Macintosh version of Notes 4.0 before running Act across the company. Lotus just shipped Notes 4.1, an upgrade that adds support for numerous Unix platforms and the Macintosh.

Act for Notes costs \$250 for single users or \$2,250 for a 10-user pack.

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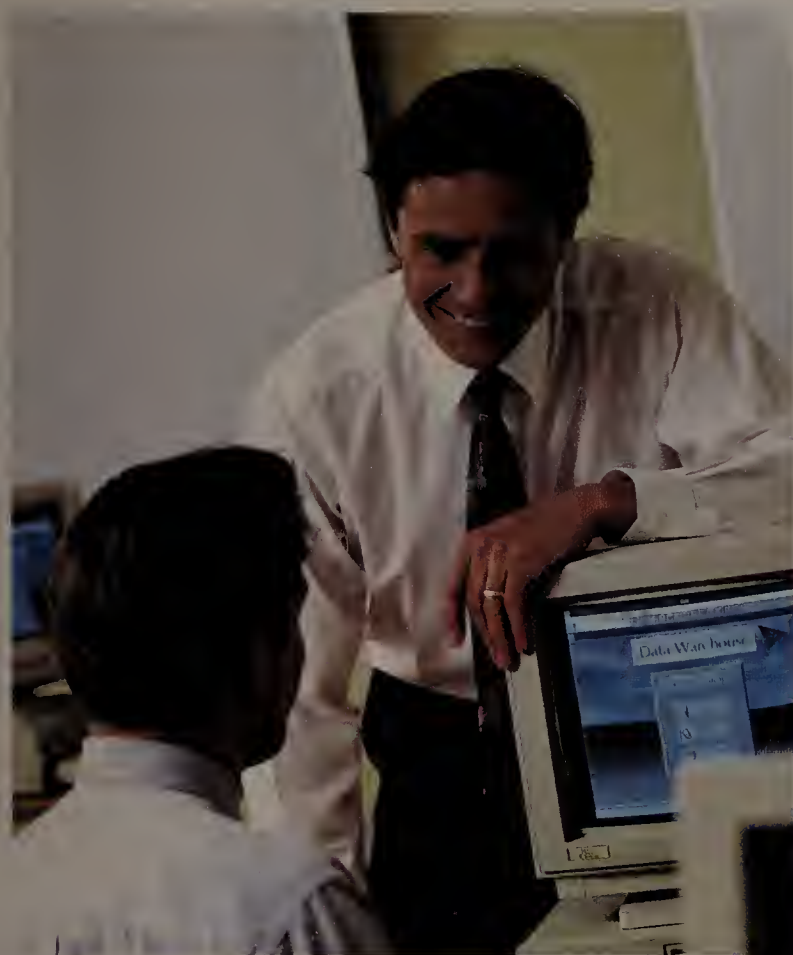
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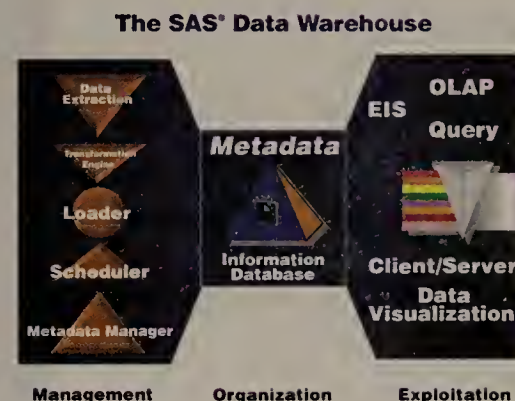


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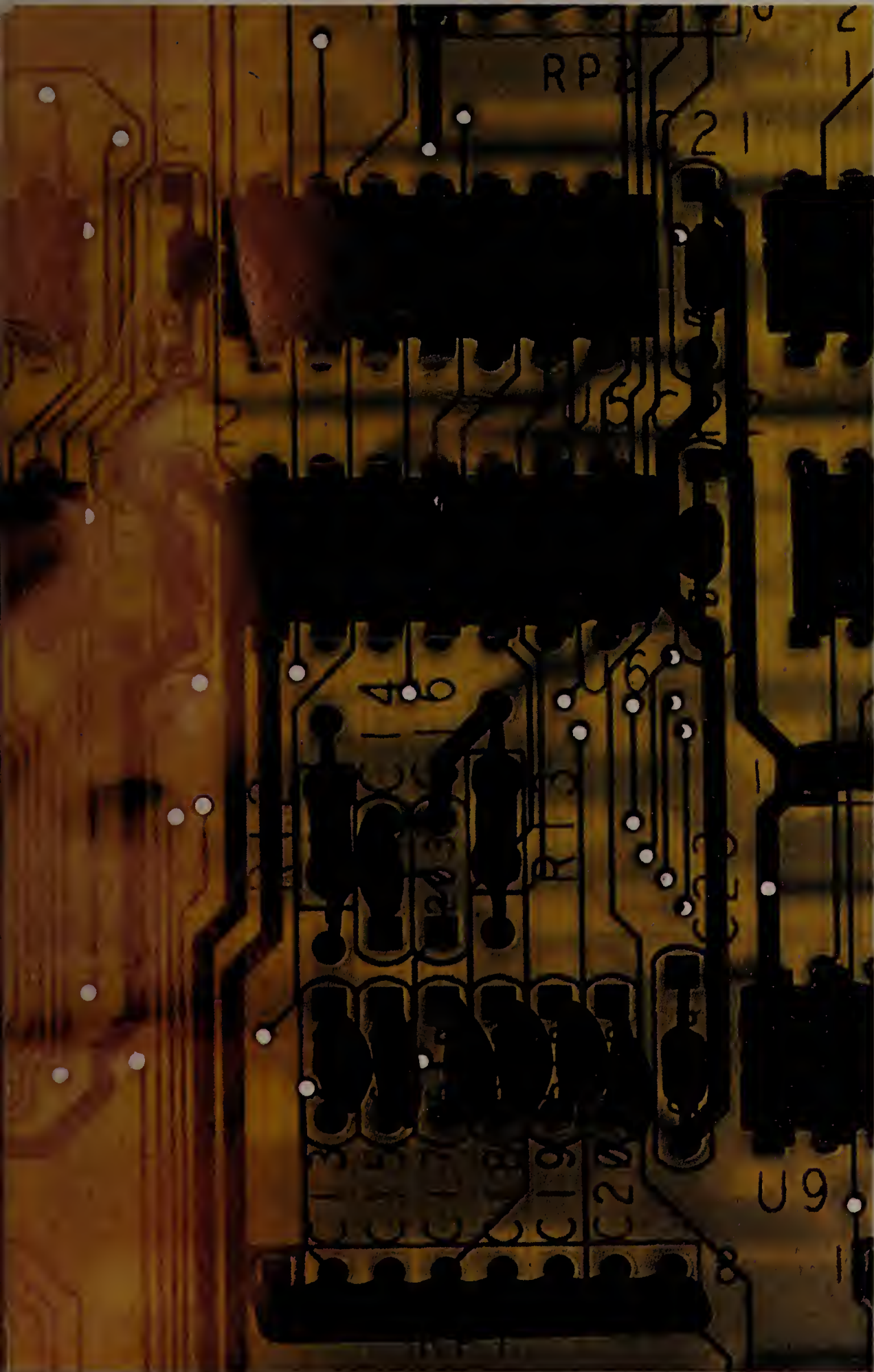
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## Open Your Mind To OpenIngres



# Bundled apps losing allure

By Bob Francis and Randy Weston

Corporate buyers are increasingly opting to choose from the a la carte menu when it comes to software for their PCs.

More and more, users are ordering up a customized software bundle from their

hardware suppliers instead of accepting the standard prepackaged bundle. Sometimes they simply choose to order their corporate PCs stripped of operating systems and applications so they can load their own software.

"In the business environment, it's a big

issue. Bundle the [operating system]; that's okay. But applications are a whole different thing," said Bill Kriner, department communication coordinator at U.S. West Communications Group in Seattle. The reason, Kriner says, is that he already has license deals with software vendors, and keeping

up with software prebundled on systems becomes just one more management headache.

"It is getting better. A lot of times vendors provide uninstalled programs, so you can remove them by pointing and clicking," Kriner said.

Analysts said corporate users sometimes find preloaded software to be a problem. "If they have to remove the preloaded software and then load on their own bundle, it's just more costs added to their PC," said Richard Zwetchkenbaum, a PC analyst at International Data Corp. in Framingham, Mass.

## Desktop PCs

"Typically, we buy a lot of units that come bundled. We completely clean them out [and] add our network drivers and basic [operating system]," said Sean Gilbert, an information systems manager at CardService International, Inc. in Agoura Hills, Calif. "Everything else we run from servers because that's where we have the power to control licensing."

PC makers that sell direct to users, such as Dell Computer Corp. in Austin, Texas, and Gateway 2000, Inc. in North Sioux City, S.D., have long offered to preload operating systems and applications on customers' systems. But now even vendors that sell through resellers are picking up on the trend.

According to IBM's research, about 80% of large customers erased the programs from the hard drive once the system was shipped to them. IBM typically bundles a choice of operating systems and several utility programs with its hardware.

In response, IBM PC Co. started a program last month called Ready-to-Configure for its PC 700 line. The PC Co. ships those models with no software or with customer-specified software, said Robert Judge, director of commercial desktop programs at IBM. The company will also load custom software that the customer provides. For PCs shipped without operating system software, IBM deducts the price of the operating system, he said.

Most large PC vendors or their resellers will remove the unwanted software if requested, but IBM is the only indirect vendor to target users with a program designed for companies that want a specific software package. IBM officials said they will probably expand the program.

The trend isn't likely to meet with much resistance from developers. Jeffrey Tarter, publisher of "Softletter," an industry newsletter in Watertown, Mass., said software companies don't see a great deal of revenue from software bundling anyway.

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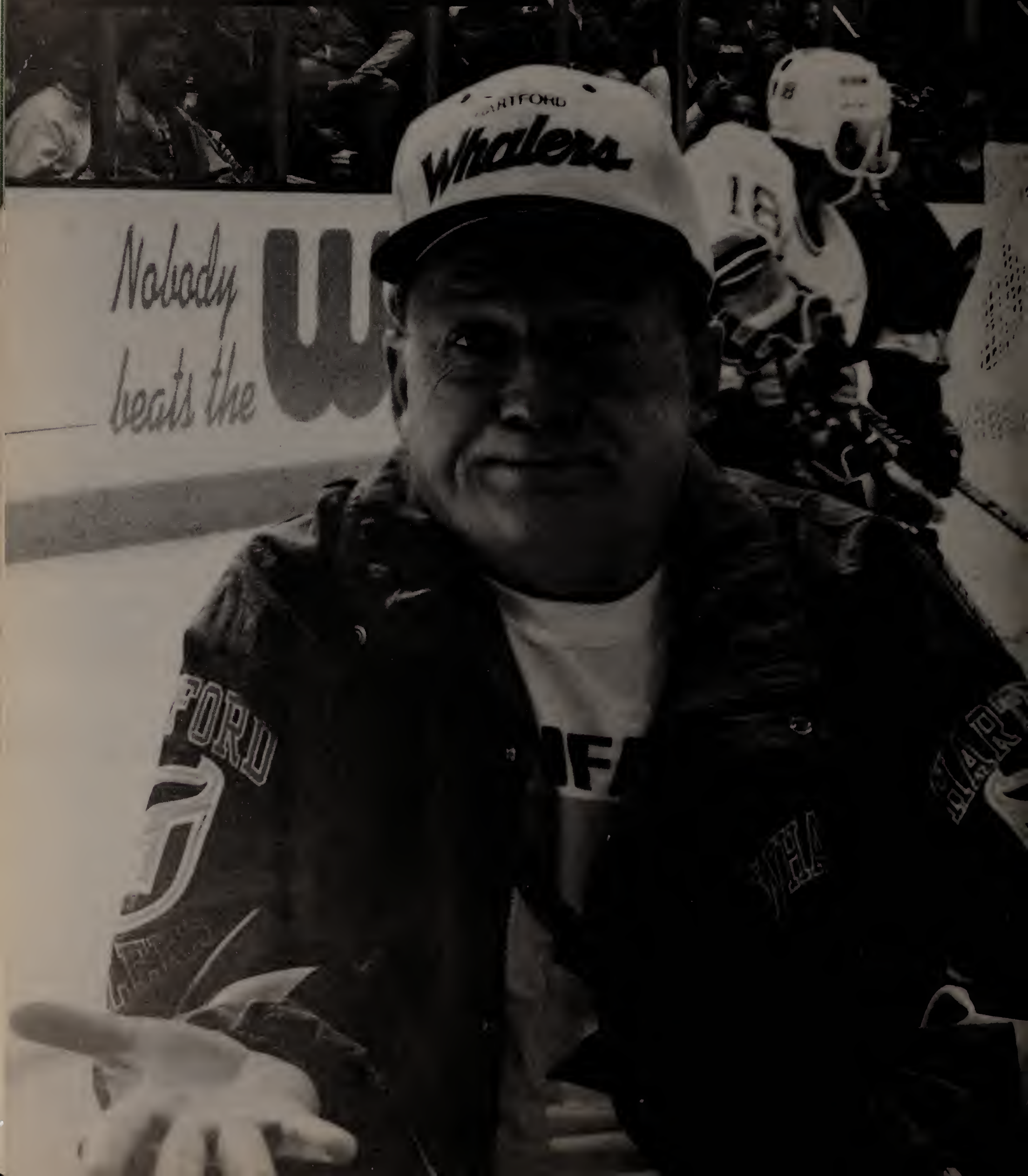
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## Software Business Practices Survey

## Internet earnings soar

By Juan Carlos Perez

Internet-enabled products are fast becoming a primary source of revenue for a growing number of software vendors.

That was the key finding of this year's Software Business Practices Survey. Data for the poll was collected in January from nearly 1,000 firms. Price Waterhouse conducted the annual survey; it was sponsored by the Massachusetts Software Council, Inc., the Software Publishers Association, the Information Technology Association of America and Price Waterhouse.

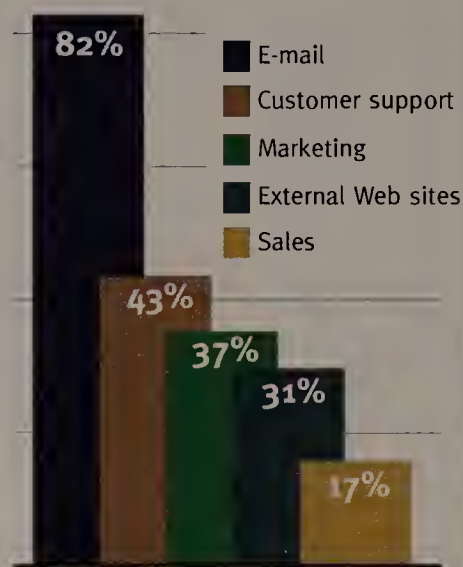
The survey found that for software companies, the Internet has become a venue to advertise and sell products and a new market for Internet-enabled applications.

"We in this industry feel like we're storm chasers, because we have [an] Internet storm developing around us," said survey committee chairwoman Pamela Reeve, CEO of Lightbridge, Inc. in Waltham, Mass. For the first time in the survey's six-year history, a number of respondents — 5% — said Internet-enabled products are their primary source of revenue. And 10% listed sales of 'net-enabled applications as one of their Top 5 sources of revenue.

The poll also found that the number of companies that offer Internet-based applications will triple this year compared with last year. And 82% of surveyed firms said they use the 'net for electronic mail, 43% said they use it for customer support and 37% said they use it for marketing. Another 31% said they had a World Wide Web site.

In Chicago, for example, the number of firms that provide Internet-related software jumped from five at the end of last year to 75 today, said Ed Denison, executive director of the Chicago Software Asso-

## How do you use the Internet at your business?



Base: 946 CEOs at various-size companies

Source: Price Waterhouse, New York

ciation. The 'net's popularity has opened new markets in the software industry, such as Web site development, said Karen Giles, president of the Minnesota Software Association in St. Paul.

Other survey results include these:

- Seventy percent of respondents said they posted profits last year.
- Seventy-three percent said they plan to add jobs this year; less than 1% plan to downsize.
- Nineteen percent raised capital, though 35% wanted to.

The survey results will be formally released Wednesday at the Mass. Software Council's spring meeting. The results also will be posted online at <http://www.softwarecouncil.org>.

## \$2B merger puts telecom pioneer in 'net business

By Mitch Wagner and Randy Weston

Business telecommunications pioneer MFS Communications, Inc.'s purchase of Internet service player UUnet Technologies, Inc. may give users lower-cost access to one of the most advanced Internet backbones.

"It makes a lot of sense," said information systems manager Michael Wheeler, president of the Desktop Video unit of NBC in New York. "MFS already has wire going into many of the office buildings in the world, and now they can put Internet down that wire."

Alan Taffel, vice president of sales and marketing at UUnet, agreed. He noted that 40% of UUnet's costs are for local telephone lines to take Internet signals from centralized distribution points

Communications analyst Mike Smith at Datapro, Inc. in Delran, N.J., said the merger puts MFS in the thick of the brewing battle for local telephone business. "It's a smart move on MFS' part, certainly. When looking at the prospect of competing with the Bell companies, this is a way of acquiring a customer base immediately, as well as UUnet's expertise and the services that UUnet offers.

By adding Internet service to its portfolio of local and long-distance telephone offerings, MFS is positioning itself to lure customers away from regional Bell operating companies, said Howard Hecht, a telecommunications analyst at Decisys, Inc. in Sterling, Va.

"[MFS has] a credible international network, from access to backbone," Hecht said. "They've gotten to where the Baby Bells want to be."

## Largest technology mergers

Companies	When	Amount
Cisco Systems and StrataCom	April 22, 1996	\$4B
IBM and Lotus	June 22, 1995	\$3.5B
MFS Communications and UUnet Technologies	May 1, 1996	\$2B

— known as points of presence — to customer premises.

MFS is no stranger to Internet technology. The company plays a vital role in the 'net, operating two of the central switching stations, or metropolitan area exchanges (MAE), through which most of the nation's Internet traffic is routed — MAE-East in Washington and MAE-West in San Jose, Calif.

The acquisition changes MFS' status in the Internet marketplace from being a neutral party that provides services to all Internet service providers (ISP) to being one of several ISPs battling for market share.

But Taffel pointed out that several other centralized switching points are operated by ISPs, including MCI Communications Corp. and Sprint Corp.

Hecht predicted the merger would be the first of many buyouts of Internet service players. "The ISPs are not going to be stand-alones beyond 1997," he said. "They all did a great job, but they were built for sale, not longevity."

Wall Street investors seemed to agree. The MFS and UUnet merger announcement sent through the roof the stock prices of competing services Netcom On-line Communications Services, Inc. and PSInet.

After the proposed \$2 billion stock swap is completed, the combined companies will have monthly revenue of about \$1 billion and more than 50,000 business customers in North America, Europe and Asia. UUnet's employee count of 600 is expected to increase under the new regime, Taffel said. No changes in top management at UUnet are planned, he added.

## Oracle combats user confusion

By Dan Richman

Oracle Corp. this summer will put one executive in charge of marketing in an attempt to reduce user confusion caused by the onslaught of company products.

Marc C. Benioff, 31, will fill the new position of senior vice president of marketing. He will report directly to Chairman and CEO Larry Ellison. He previously was senior vice president of World Wide Web and workgroup systems at Oracle.

Oracle's culture, which encourages independent groups to develop alternative or even competing products, has sent users ambiguous or conflicting messages. For example, users said Oracle's Power Objects, a low-priced development tool announced last year, seemed to compete with its Developer 2000.

"The message was completely unclear as to

when one or the other would be more appropriate to use and whether they worked together," said Dale Lowery, executive director of Oracle User Resource, a consortium of East Coast Oracle users' groups.

Putting a single executive in charge of marketing "probably gives us one door to knock on, one source for information," he said.

Oracle has released as many as 20 new products or upgrades in a year. Ten or more releases in a year is common.

It once was simple to keep up with Oracle, but "now it has so many products that poor shmoe like me can't keep up. Some oversight would be a wise move," said Mike Prince, chief information officer at Burlington Coat Factory Warehouse, Inc. in Burlington, N.J.

**& Oracle gets into the automotive parts business. See page 58.**



Sneakers

**& What do intranets and client/server have in common? Hidden costs. See page 37.**





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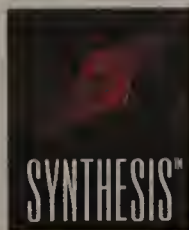
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# Computer Industry

## TI revamp takes hold

By Mindy Blodgett

**W**hen Steve Lair was named to head Texas Instruments, Inc.'s laptop program almost a year ago this week, he made a brash proclamation.

He said that within 36 months he would wrest the notebook market lead from his former employer, Toshiba America Information Systems, Inc. in Irvine, Calif.

His strategy for doing so relied heavily on changing TI's image as a technologically superior company out of touch with users. Lair also took aim at TI's pricing.

Today, a third of the way into the fight, Lair, TI's vice president and executive director of mobile computing products, said he is still confident he can meet his goal.

"I'd say we are right on track if not tracking ahead in our goal," Lair said. "Some said I was pretty outlandish to make the claim, but in some ways we

have actually exceeded expectations."

Industry observers said that by some standards, Lair is entitled to his confidence. According to International Data Corp. (IDC) in Framingham, Mass., Dallas-based TI saw a 214% increase in market share in the fourth quarter of last year over the same quarter in 1994. This boosted its market share from 2.7% (sixth place) to 5.9% (fifth place), according to IDC.

The overall growth in the U.S. market from 1994 to last year was 142%, according to IDC, which said TI led the pack.

But that wasn't enough to pull TI's notebook computer division out of the red for the fourth quarter.

"He has certainly pumped up the vol-

ume," said Kimball Brown, an analyst at Dataquest in San Jose, Calif. "But at some stage he is going to have to make some money — or he won't be there in three years."

TI was respected for its technology and its defense contract products, but its laptop business lagged due to distribution problems and a lack of mind share. TI also needed to steer its attention closer to the corporate market, according to industry observers.

One of Lair's initial goals when he moved over to TI after leaving Toshiba, where he was a vice president of market-

ing, was to improve his new employer's marketing profile.

Lair won't say how much TI has spent

on that effort, but one published report said the company was expected to spend more than \$20 million last year — a sixfold increase from 1994 — to advertise its laptops. According to TI's 1995 annual report, the investment in marketing "caused the [notebook] business to operate at a loss during . . . the year."

Another strategy has been to price aggressively. TI and Toshiba began this year with neck-and-neck price slashing that kicked off price cuts from all the leading vendors.

### Focus on users

But overall, the strategy has been to move the firm closer to the needs of the users rather than to focus exclusively on technology, Lair said. He said TI has invested heavily in product development since he has been there, focusing on ergonomics and the latest technology.

But the question remains whether TI can ultimately triumph over Toshiba and vanquish IBM PC Co. and Compaq Computer Corp., respectively ranked No. 2 with a 10.7% market share and No. 3 with a 10% market share.

"He's gotten mind share by being a very pushy guy," said Ken Dulaney, an analyst at Gartner Group, Inc. in San Jose, Calif. "But Toshiba is a very powerful leader, and Compaq is coming out with some great products. We'll just have to see."

*Last year, Texas Instruments ranked fifth in the U.S. notebook market, with a 5.9% share — a 142% increase over 1994*

**To continue these gains, industry observers say TI needs to:**

**Continue to focus on marketing**

**Improve distribution and supply**

**Continue aggressive pricing schemes**

Source: International Data Corp., Framingham, Mass.

## Someone forgot to tell PC buyers

By Bob Francis

The much-ballyhooed PC market slowdown failed to appear as predicted in the first quarter, according to market analysts.

And Compaq Computer Corp., which initiated much of the slowdown talk, did the most to put the issue to rest.

Houston-based Compaq, in fact, widened its lead as the top PC manufacturer in the U.S. during the first quarter, while its closest rivals lost market share, according to market researchers at International Data Corp. (IDC) in Framingham, Mass., and Dataquest in San Jose, Calif.

Both research groups last week issued reports that refuted worries of a slump in PC sales. Dataquest indicated that PC vendors shipped 16.1 million units in the

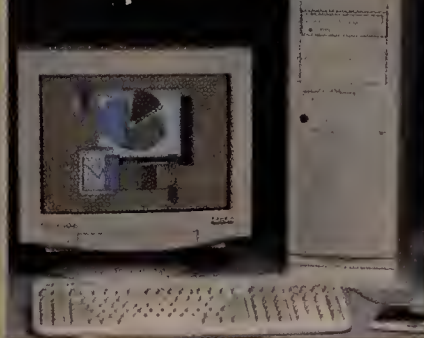
first quarter, 18.4% more than in the quarter last year, when 13.7 million units shipped.

The slowdown chatter reached its apex following a January announcement that Compaq didn't expect to meet first-quarter projections. That, coupled with a slowdown in chip orders and a drop in memory prices, sent some analysts scurrying to lower demand projections.

In April, however, Compaq reported earnings of \$235 million on sales of \$4.21 billion, better than many analysts projected.

And following the release of industrywide first-quarter figures last week, analysts said any blip in chip and PC orders during the winter was the result of companies' shedding excess inventory, not an indication of long-term difficulties.

### PC shipments



Source: International Data Corp., Framingham, Mass.

Dataquest now predicts a PC growth rate of 19.1%, down from last year's 25.6% but still healthy. Similarly, IDC expects the domestic PC market to increase 15.3% in 1996, down from 23% last year.

"PC growth is slowing down, but we're not in any sort of a downward spiral. Other industries would love a 15.3% growth rate," said Richard Zwetchkenbaum, a PC hardware analyst at IDC.

But that doesn't mean some companies weren't hurting in the first quarter. Turmoil-plagued Apple Computer, Inc. in Cupertino,

Calif., saw shipments plummet 22% and was the only manufacturer in the Top 5 to see a decline in shipments, according to IDC. "Apple needs to show some clear messages to its customers," Zwetchkenbaum said.

And IBM PC Co. in Armonk, N.Y., which was the No. 4 U.S. PC maker in the year-ago quarter, fell out of the Top 5 for the first time, according to IDC. The company was saddled with too much inventory in the distribution channel from shipments in the fourth quarter of last year, according to Zwetchkenbaum. "Their distribu-

tors simply couldn't take any more inventory," he said.

Packard Bell Electronics, Inc. in Westlake Village, Calif., which was No. 1 a year ago, slipped to No. 2. Gateway 2000, Inc. in North Sioux City, S.D., held on to No. 5, with 6% of the market.

Moving up the PC hardware food chain was Hewlett-Packard Co. in Palo Alto, Calif., pushing its way from No. 8 to No. 3 in the first quarter of 1995.

"HP has really vaulted its way to the top with both commercial and consumer desktops," Zwetchkenbaum said.

VENDOR	Q1 1996 UNIT SHIPMENTS	Q1 1996 PERCENT OF TOTAL SHIPMENTS	Q1 1995 PERCENT OF TOTAL SHIPMENTS
Compaq	740,000	12.9%	10.7%
Packard Bell	620,000	10.8%	11.8%
Hewlett-Packard	401,000	7%	3.4%
Apple	370,000	6.5%	9.4%
Gateway 2000	341,000	6%	5.4%
TOTAL MARKET	5.73M	-	-



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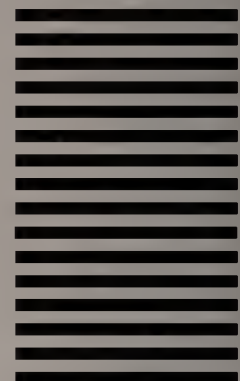
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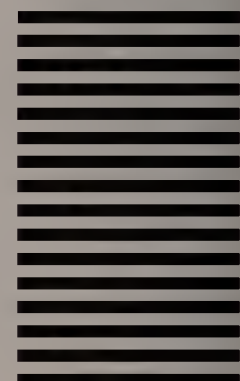
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# Announcing the first world-class conference on intranets

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While the Internet continues to grab the attention of the media, the business world is embracing Internet technology for intranets. By 1999, International Data Corporation (IDC) projects that intranet access in business will outpace corporate Internet access by more than two to one. IDC states that "if WWW, HTML, and other Internet-based applications are widely adopted and used for internal communications and business applications, then IT customers and vendors face market shifts as radical and challenging as the adoption of PCs and PC LANs in the late '80s." The implications of these market shifts and more will be explored in detail at Computerworld's intr@net '96.

This exclusive, world-class conference on intranets — internal Webs and the enterprise — is an interactive forum in which CIOs and industry leaders will discuss and formulate their agendas for the corporate growth of intranets. Presented by *Computerworld*, the leading weekly newspaper for information systems management, and sponsored by Compaq, Informix, Netscape and Sun Microsystems, this conference will set the agenda for the growth of corporate intranets in the '90s.

CIOs interested in attending Computerworld's intr@net '96 should call (800) 340-2366 to be pre-qualified. Participation in this June event is strictly limited. We expect a sold-out conference. So call today!

CIOs and industry leaders slated to attend Computerworld's intr@net '96, as of 5/1/96.

Gordie Petterson, 3M  
Spenser Malkelmurry, Avon Products  
Richard Headly, Banc One Corporation  
Al Battaglia, Becton Dickinson & Co.  
Maryann Goebel, Bell Atlantic Nynex Mobile  
Susan Unger, Chrysler Corporation  
Paul Weinberg, CIGNA  
Ronald Ward, Compaq  
John E. Mitchell, Cooper Tire & Rubber Co.  
Eston Fain, Deluxe Corporation  
Rich Crutchfield, Equifax, Inc.  
Bill Ledmann, Federal Home Loan Mortgage  
Credit Corporation  
Virgil Pittmann, Fireman's Fund Insurance Co.  
Mark Cates, First Union Corporation  
Charlie Szuluk, Ford Motor Co.  
Regis McKenna, Gemini McKenna  
Thomas Braswell, Genuine Parts Co.  
Herb McCauley, Harris Corporation  
Steve Hall, Harvard University  
Robert R. Walker, Hewlett-Packard  
Nancy Markel, Home Savings of America

Jim Woods, Hughes Electronics  
Gerry Prothro, IBM  
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Carl W. Moore, International Paper Co.  
Ed Parrish, Johnson & Johnson  
Richard Connell, Liberty Mutual  
Tom Foggerty, Marsh & McLennan Cos. Inc.  
George Brenner, MCA/Universal  
Erma Gray, McDonald's Corporation  
Kim Spenchian, MGM/United Artists  
Betty Butkus, Mobil Oil Corporation  
Dave McKay, Moore Business Forms  
Jim Barksdale, Netscape  
James McCann, Northrop Grumman  
James F. Sutter, Rockwell International  
Alan Guibord, RR Donnelley & Sons Co.  
Steve Heckler, Sony Pictures  
Allan Ditchfield, The Progressive Group  
Jim Rutt, Thomson Electronic Info. Resource  
José Tolovi, Jr., Tolovi  
Jim Ware, University of California - Berkeley  
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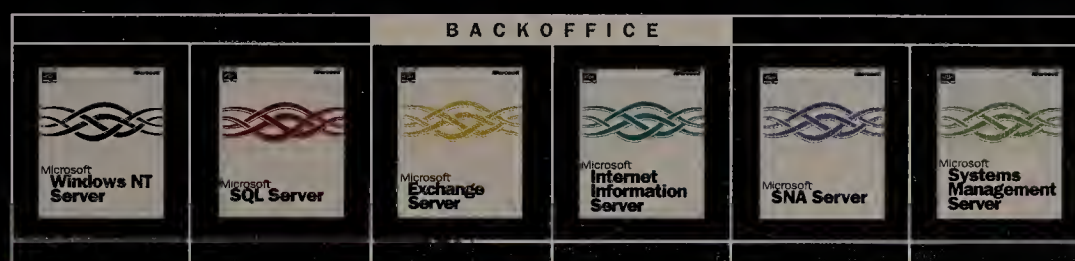
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## Editorial

## Directory of future

Whenever gangs of vendors gather to cheerfully announce a new "open" standard, the MEGO (Many Eyes Glazing Over) factor goes right off the scale.

Yet another incomprehensible acronym to remember while we wait years for actual products? Spare us.

So naturally enough, Netscape's recent announcement of its Lightweight Directory Access Protocol (LDAP) was just another blip in the blizzard of weekly stories about the Internet. Even worse, LDAP has its roots in the stony soil of the X.500 electronic-mail directory standard — a complex, ugly place where even engineers fear to tread.

But there's actually a lot to like about LDAP, despite the geeky name and intimidating parent. This open protocol, which accesses online directory services over TCP/IP networks, promises a truly universal Internet directory in our lifetimes, no less. LDAP could become the language that E-mail directories will speak, much the same way Hypertext Markup Language has become the standard for World Wide Web developers.



The protocol provides a standard way for Internet clients, applications and Web servers to access the E-mail addresses of tens of thousands of 'net users.

So far, there are 40 industry big shots supporting LDAP, including AT&T, Sun, IBM/Lotus and Novell. Even Microsoft, that reluctant latecomer to the Internet party, is an LDAP believer — although Netscape didn't bother to invite the PC software behemoth to its coming-out party. Cheeky bunch, those Netscapers.

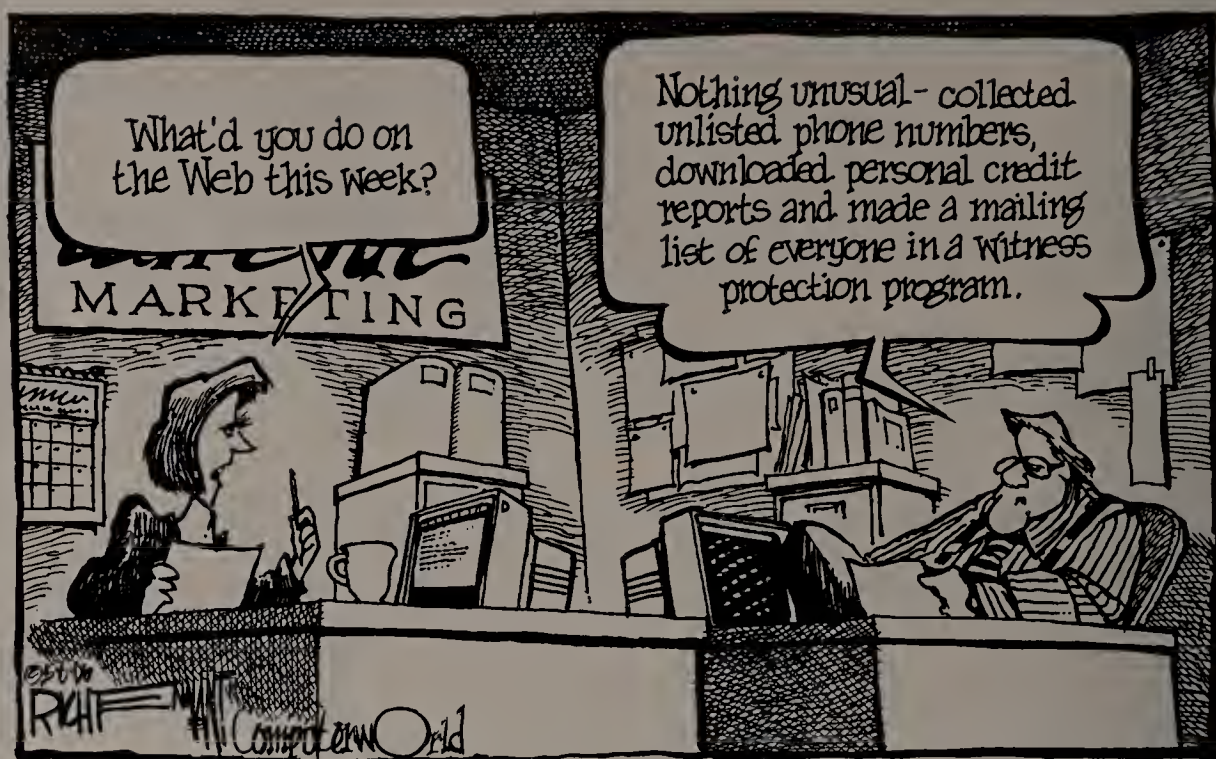
Products that use LDAP are supposed to start appearing within months, not years. Support for the protocol will show up in midyear versions of Netscape Navigator and the next wave of the company's Web servers. IBM/Lotus Notes and Microsoft Exchange and Window NT all will support LDAP within the year. Presumably, companies blessed with a mix of hostile E-mail systems could blend them into one directory and dump those expensive, unreliable gateways.

For many corporations, this standard approach could spell massive relief from the pain of administering and coordinating multiple E-mail directories. Network administrators would be able to troubleshoot LDAP-compliant products from a central point, as well.

Imagine a world where E-mail actually gets there. It might even be worth learning another acronym.

*Maryfran Johnson*

Maryfran Johnson, Executive Editor  
Internet: maryfran\_johnson@cw.com



## Letters to the editor

## Microsoft tactics bear watching

Your editorial on America Online Chairman Steve Case in bed with Bill Gates ["AOL's sellout" CW, March 18] was exceptional.

I am as much dismayed by Microsoft's tactics as I am afraid of its complete influence. The working IS community must seriously consider the long-term effects of Microsoft or any company having a lock on the entire spectrum of electronic communications. When I canceled my AOL membership, I noticed a long wait time; perhaps many others have the same sentiment.

Jed E. Goldberg  
Miami

## Spin-off service

In the article, "Spin-off Doctors" [CW, April 8], Kathy White makes some really good points about the issues that information technology managers face regarding corporate spin-offs. She correctly points out that the relationship between the parent company and the new firm must be defined in advance.

My recommendation is that this be done in a definitive service agreement, not unlike one you would develop with a third-party outsourcer. The service agreement needs to cover pricing, level of support and how differences of opinion will be resolved. An IT manager should not fear this type of situation. With proper planning and well-managed execution, it can be an exciting project.

Michael T. Abbene  
QORE Business Solutions, Inc.  
Ballwin, Mo.  
mtabbene@mo.net

## Who's fooling whom?

Let me see if I understand this correctly.

In "Desktop users left thirsting for Java" [CW, April 22], you say Java developers are hitting a wall because in order to use these wonderful platform-independent applications that are going to work with anything, anywhere, anytime, more than 80% of users will have to upgrade to Windows 95 or NT. Does this make Java the proverbial killer app for Win-

dows 95? Sun gives away Java. Microsoft sells Windows 95 and NT. Mom-and-pop mutual fund groups are buying Internet stock in companies that don't sell anything to users who refuse to pay for anything they download. And the demise of Microsoft is imminent. Who's that I hear laughing all the way to the bank?

Gilbert Belisle  
75262,2022@compuserve.com  
Toronto

## Get stats straight

I don't know if it is The Standish Group study or *Computerworld's* reportage of it, but the statistics quoted in "Some role model!" [CW, March 11] look extremely dubious.

Supposedly, the findings were that 16% of private-sector systems development projects "were completed on time, within budget and with all the features originally planned," whereas 53% "were completed late, over budget, and with limited functionality" and 31% were canceled before completion. Since 16 plus 53 plus 31 equals 100, all 8,380 projects supposedly fall into one of these three categories.

No projects were completed late and with all the features originally planned. Nor were any projects completed on time with limited functionality. Back to Statistics 100 for your reporter. Maybe The Standish Group needs a refresher course, too.

Laura M. Freeman  
Informix Software, Inc.  
Portland, Ore.

## Blues you can use

Bravo for your article, "Import/export blues hit users" by Esther Schindler [CW, April 1]. A reminder of the kind of problem that drives real-life users mad every day is always timely, especially on April Fools' Day. We all can benefit by remembering such issues — whether we are user, vendor or other industry participant. Similar reviews focused on specific, frequently necessary tasks would make a welcome regular *Computerworld* feature.

Michael Dortch  
UTG, Inc.  
San Francisco  
More letters, page 40

■ Computerworld welcomes comments from its readers. Letters should not exceed 200 words and should be addressed to Paul Gillin, Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.



Joseph Maglitta

# Dying to make technology work for all

Sometimes our technology projects seem like matters of life and death. But take a moment to meet some people for whom that is literally true.

Lisa Valanti never thought she would give her life for some decade-old IBM PCs. Yet since Feb. 12, she and three others have fasted to win release of 425 PCs seized by U.S. Customs Service agents.

The church-donated PCs are needed to finish a medical information system for neighborhoods in rural Cuba, says Valanti, a 47-year-old activist from Pittsburgh.

Early this year, Pastors for Peace, a Minnesota-based religious group, organized a caravan of 15 trucks and 400 volunteers to deliver the computers and medical supplies to Cuban churches.

But on Jan. 31, federal agents stopped the caravan at the Mexican border, confiscated the PCs and arrested 12 people for allegedly violating the trade embargo against Cuba. "By no stretch of the imagination are computers humanitarian aid," a U.S. government spokesman says. So the computers sit in a San Ysidro, Calif., warehouse.

Valanti and those fasting with her — a 67-year-old Baptist minister, a 37-year-old psychologist and a 33-year-old social worker — spend their days lobbying Congress and bureaucrats. They live on water mixed with lemon juice and a bit of maple syrup. Each has lost more than 35 pounds. They rest in wheelchairs and sleep in a plastic

tent in the shadow of the U.S. Capitol.

"What is stupider?" Valanti asks. "What I'm doing or what our government is doing? I don't want to die for some obsolete machine that would otherwise end up in a landfill. But I will."

Regardless of your politics, it's difficult to not be moved by the depth of the fasters' conviction that technology could and should be used to make the world a better place. Yet most of us are too caught up in ship dates, problems and deadlines to think much about the awesome impact of our collective work on our communities, our nation, our world and our families. We're too busy to look much beyond our own screens. A kind of karmic logic suggests we should.

If we help create a class of technology have-nots, isn't it our responsibility to bring technology to people who need it but can't afford it? If we help create systems that displace jobs, why



These people are willing to die to free 425 obsolete PCs for a Cuban medical information system. How far would you go?

wouldn't we help train the displaced and welcome them back in new roles?

I know such talk seems out of fashion. Today's economic Darwinists would have everyone boot themselves up by their own bootstraps. Selfish is in. But what parent would labor to give birth to a child, only to ignore what the world did to it and it to the world?

What if every technology company donated 1% of its profit to computer projects aimed at making the world a better place? What if every information systems department, with the same goal, gave 1% of its budget or time to teach, tutor, build, install and repair systems?

People outside the industry are willing to die for that cause. What are we willing to do?

Maglitta is a *Computerworld* senior editor who believes good business includes good deeds. His Internet address is [joe\\_maglitta@cw.com](mailto:joe_maglitta@cw.com).

We're too busy to look up from our screens to help the technology have-nots.



John Gantz

## Intranets: A thicket of hidden costs

O n the face of it, an intranet looks like a great, low-priced substitute for Lotus Notes or other database applications. Each of the pieces — the browsers and the server software and hardware — seems so much cheaper.

But there was a time when client/server computing looked cheaper than mainframe computing, too. Only after users gained some real-world experience did we learn that the life-cycle costs of client/server applications could be double the cost of mainframes. We also discovered that for some applications, client/server could be a very bad idea indeed.

Intranets will be like that. For the next year or two, intranets will be the rage; our usually conservative forecasts call for a market blowout in intranet servers, for example. Meanwhile, user companies will be unearthing the intranet's hidden costs, dollar by dollar. The following are the top candidates:

• **Multiple browser support.** Think you'll be able to standardize on a single browser at the client end? Sure you will — just as you did with PC operating systems, graphical user interfaces and communications software.

• **Hardware upgrades.** You need them for Notes, but you'll

need them for intranets, too. Forget the \$500 intranet terminal for now — at least until you see a few in operation. Remember that the cost of a hardware upgrade is 2% for the hardware and 98% for employee downtime, business disruption and administrative cost overruns.

• **Application development.** Think webmasters grow on trees or are cheaper than Notes programmers? Nah.

• **Re-engineering.** With Notes and other groupware products, there's a base of experience in re-engineering business processes to take advantage of the technology. But getting the right data feeding into the intranet server is a new discipline.

• **Management.** There are few automated tools for capacity planning, systems management and monitoring. Administration of remote server sites will be tough. Then there's security. By the time you pack your intranet in firewalls and put even minimum-security controls at the client end, you'll have a bad case of sticker shock.

• **Integration with legacy systems.** This is always costly until the legacy systems vendors themselves co-opt the new movement. That tends to drive up the cost of "open" systems to proprietary system levels anyway. Funny how that works.

Consider the costs of webmasters, security and integration with legacy systems.



1973

Intranets just seem cheap. Quadruple your budget and double your schedule.



• **Screwups and restarts.** Think you'll get it right the first time? It'll be easy to build intranets for tasks for which they aren't really suited. What works well for information publishing may be miserable for collaboration. A system that's good for occasional file downloads may be terrible for high-speed database input from remote locations.

These are the hidden costs of unfamiliarity — the same hidden costs early users of minicomputers, LANs and client/server systems faced.

But there is a final hidden cost — the cost of not deploying intranets at all. It can take a while for companies to figure out how to exploit a new technology. But once they do, the returns can be dramatic for the early-adopter companies that beat their competition.

Intranets will be like that. You'll wrestle with them and fight holy wars about their place in your organization. You'll spend four times as much money and take twice as long as you expected to get them running. You'll train webmasters who will leave for other companies. You'll endure ridicule from resistant end users who have unrealistic expectations and zero tolerance for training.

And one day you'll look around and find that intranets are running the company. Users will be relying on them like the ATM on Saturday night.

Gantz is a senior vice president at International Data Corp. in Framingham, Mass. His Internet address is [jgant@idcresearch.com](mailto:jgant@idcresearch.com).



How do you think  
the rest of management  
views IS managers?





Are you a little paranoid?

Or do you sense a lingering perception? That you care too much about chips and LANs and GUIs, and not enough about margins, production goals and deliverables?

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Because in reality, you don't have time to care about either.

You're too busy dealing with that patchwork of an infrastructure you inherited. With its daily crises. Its incomprehensible customizations. And the constant search for band-aids that will, at the very least, keep it up and running.

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To find out how SAP software can help your company work the way  
you've always wanted it to work, call 1-800-283-1SAP.

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## Letters to the editor

### Hard choices

I am replying to the article "DEC boxes score with users" [CW, April 22] and specifically to the following extract: "For instance, a top-of-the-line AlphaServer 8400

can support 12 350-MHz Alpha chips, 14G bytes of Very Large Memory, 39T bytes of storage, 144 industry-standard Peripheral Component Interconnect expansion slots. ..." This states that I can have all these wonderful things at the same time with one AlphaServer 8400.

Trade-offs have to be made in deciding how the nine valuable system slots can be used.

For instance, you could have 12 proces-

sors with 4G bytes of memory and one I/O module. Or you could have the full 14G bytes of memory, but then you get only two processors and one I/O module.

I can't even speculate what you need to do to arrive at 39T bytes of disk storage, and I invite Digital to educate me here.

Derek Gardiner  
Product marketing  
Cray Research, Inc.  
San Diego

### This single person also has a life, thank you

Stress has gotten a lot of focus recently ["Stressed," CW, April 15] in all the magazines.

But it seems that the only way people feel it is OK to have a life is if it is a "family life."

There are a lot of us out here who resent the view that if a person is single, they won't mind working weekends.

I draw, paint, read, write, go to museums and hunt antiques over the weekend and at night.

It is just as important for me to get home. A life is important: your *own* life.

Jordi Waggoner  
75452.3026@compuserve.com  
Secaucus, N.J.

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Carrie Gaykowski  
Senior Director  
Marketing/Communications Services  
The Martha Felt Group



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### Programmers: There's no room at the Inc.

I have seen many stories about re-training for new technology ["Bouncing back," CW, April 1].

Whatever the skill may be, it's very difficult for a mainframe programmer to find a company that is willing to invest in him, even though he's enthusiastic about learning new skills.

Companies are not willing to train because they have no interest in long-term employees.

In addition, there is increased competition from overseas. U.S. firms are selling us down the drain.

I hope these companies will wake up and realize that they are only as good as the people who work for them.

Rich Cohn  
Mesa, Ariz.

I have recently graduated from a well regarded computer technical school in New Jersey.

I have worked part-time with PC LANs and have done some C/C++ programming for a small consulting company.

After sending out many resumes and attending a few interviews, my experience trying to enter this field as a programmer has been very disappointing and frustrating.

It seems to me that companies are willing to hire only highly experienced professionals at whom they can throw a \$40,000 to \$50,000 salary, put in a cubicle and have bang out code without needing to invest any time or training in the person.

Gary J. Ramos  
Franklin Park, N.J.  
75602.1553@compuserve.com

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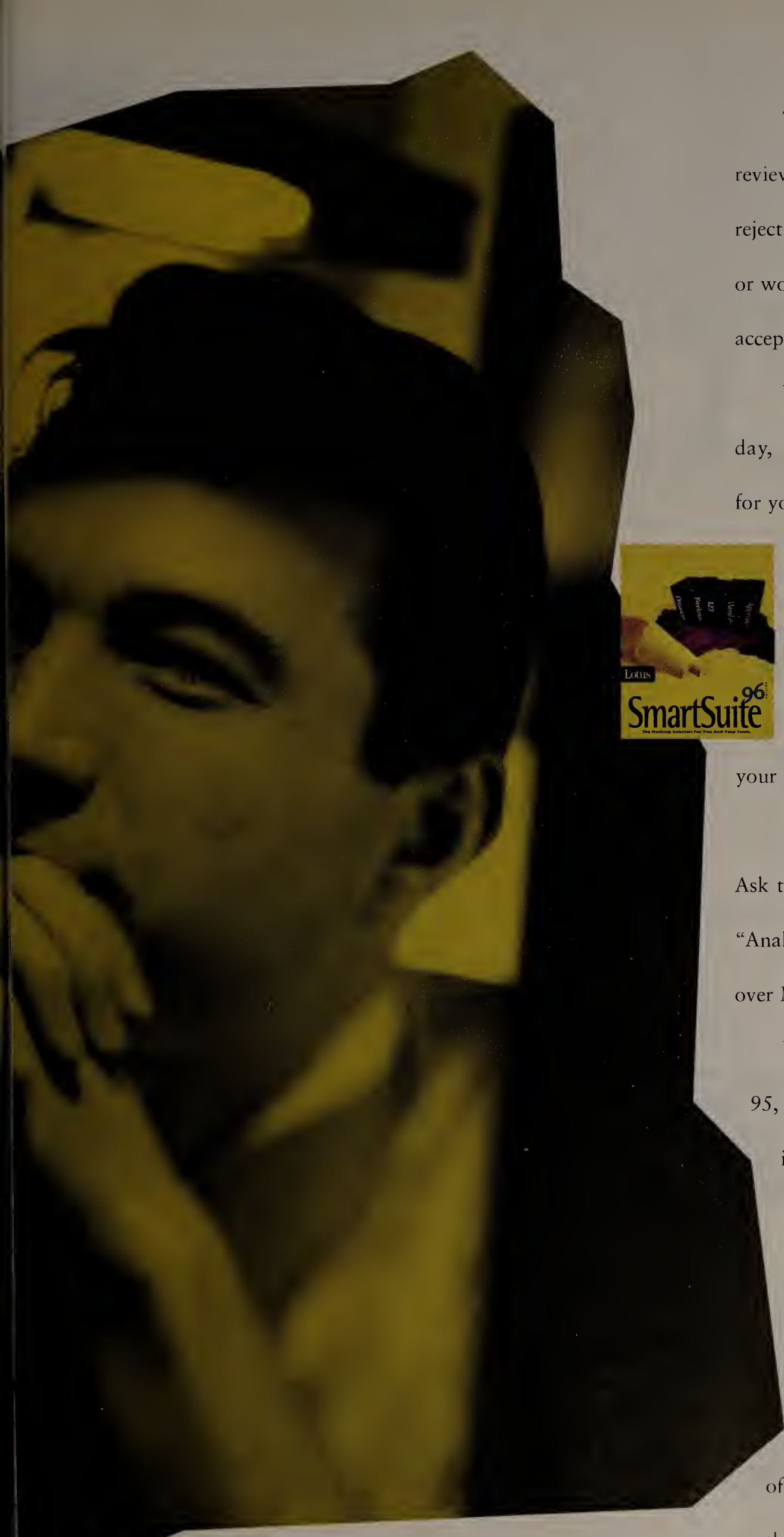
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PROCESSOR

Pictured: the HP NetServer 5/100 LH. Awards shown: PC Magazine Editors' Choice HP NetServer 5/133 LH; PC Computing BEST HP NetServer 5/133 LS2; LAN Magazine Products of the Year HP NetServer LS Series; Network Computing Editor Refuses to Give it Back Award HP NetServer 5/100 LS4; PC Computing MVP HP NetServer 5/100 LH; Computer Reseller News Channel Champion Award NetServer Series. The Intel Inside logo and Pentium are registered trademarks of Intel Corp. ©1996 Hewlett-Packard Company PPG433



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Hewlett-Packard set to franchise  
PC manufacturing, 52

# Servers & PCs

45

Servers &amp; PCs

## Notebook prices dropping

Competition and inventory reduction keep discount trend alive

By Mindy Blodgett

**T**he notebook price discounting that began shortly into the new year continued this spring.

The latest price cuts came as some laptop providers cleaned house and cut the price of older models to make way for notebooks with faster 133-MHz Pentium chips from Intel Corp. But some of the discounting was caused by a competitive market that is growing hotter, some industry observers said.

"There is definitely a bit of a price war going on as Intel pushes the notebook makers in the direction of the 133 [-MHz chip]," said John Dunkle, an analyst at Workgroup Strategic Services, Inc. in Portsmouth, N.H. "But we are also seeing a very volatile market."

Users said that while they were pleased to see prices drop, they buy when the need arises, not when low prices dictate a shopping spree.

"The prices change so often nowadays," said Bart Everett, a deputy systems administrator at the Los Angeles

Times. "We just can't pay that much attention to the market until we are ready to buy something. Then we are driven by demand. When something wears out, we have to replace it, and then we'll look at what is available through the distributor."

### Product rollout

The following vendors slashed their prices:

- NEC Technologies, Inc. in Mountain View, Calif., cut prices by as much as 12% on its top-end Versa 4000 line. The Versa 4080H with a 120-MHz processor was reduced from \$4,999 to \$4,399. NEC slashed prices at the low-end as well, reducing its Versa 4000D with a 75-MHz chip from \$2,799 to \$2,499. NEC also will announce models with 133-MHz chips and hard drives of up to 3G bytes.
- Hewlett-Packard Co. in Palo Alto, Calif., cut its OmniBook 5000 price by 15% to \$5,420 for a unit with a 120-MHz chip. HP will unveil a 133-MHz notebook this month.
- Zenith Data Systems in Buffalo Grove, Ill., cut prices on its Z-Note MX portables by as much as 16%. The 75-MHz Z-Note MX notebook is now \$3,099, down from \$3,699. Zenith also announced new models with 100-

MHz chips that cost \$2,799 to \$3,599.

• Compaq Computer Corp. in Houston expanded its LTE 5000 line. The LTE 5280 with a 120-MHz chip, an 11.3-in. screen and 16M bytes of RAM costs \$5,399. The LTE 5300 has a 133-MHz chip, 12.1-in. thin film transistor screen and 16M bytes of RAM for \$5,999.

• Acer America Corp. in San Jose, Calif., also introduced a new line. The AcerNote Light will have 100-MHz and 120-MHz chips and weigh in at 5.8 pounds. Prices range from \$1,999 to \$2,499.

• Gateway 2000, Inc. in North Sioux City, S.D., announced new multimedia PCs. The Solo line will feature 100-MHz and 133-MHz chips and an 11.3-in. Super VGA thin film transistor screen. They start at \$2,899.

## DEC's Win NT gang grabs for Unix turf

By Jaikumar Vijayan

Digital Equipment Corp. is accelerating its effort to push Microsoft Corp.'s Windows NT deeper into the traditional Unix workstation markets.

The company last week announced two high-end additions to its Digital XL Personal Workstation family — the Alpha XL 300 and 366 — based on its RISC-based 300-MHz and 366-MHz Alpha chips.

Workstations in the XL family are the industry's only Windows NT platforms that support Intel Corp. and RISC processors. That means users can start with a 100-MHz Pentium-based system and upgrade to a 366-MHz Alpha-based system.

Digital also said it will introduce its PowerStorm family of graphics accelerators across its entire XL workstation line. The PowerStorm accelerators support Windows NT and Unix environments, thereby providing a common environment for application development, observers said.

Users said they are optimistic the new workstations pack the power needed to run large Windows NT applications.

It's an important announcement for workstation users who seek to migrate away from multicolored Unix environments to a more open Windows NT environment, said Tony Iams, an analyst at D. H. Digital, page 49



**PROCESSOR:** 100-MHz or 120-MHz Pentium

**WEIGHT:** 5.8 lbs.

**SCREEN:** 10.4-in. dual scan or 10.4-in. active-matrix thin film transistor color display

**SLOTS:** Two Type II PC Cards or one Type III

## Today's DRAM, tomorrow's memory

By Bob Francis

New memory technologies will soon join current fast page memory (FPM) and extended data output (EDO) dynamic RAM. How soon this will occur is still open to question.

New PC systems — some announced, others just around the corner — will include new synchronous dynamic random access memory (SDRAM) that includes the following features:

- Uses 168-pin dual in-line

memory modules, replacing current 72-pin single in-line memory modules (SIMM).

- Runs at 3.3V rather than 5V, which speeds memory functions and uses less power.

### PC memory technology

The shift to SDRAM is taking place as the price of memory recovers from a free fall that began late last year, when prices dropped as much as 50%. Current prices are about \$75 for 4M-byte SIMMs. But industry officials and analysts said SDRAM prices won't be out of

line with current prices.

"You won't see prices get too high, or this transition could get stalled," said Gary MacDonald, vice president of marketing at Kingston Technology Corp. in Fountain Valley, Calif.

The present array of memory options can prove bewildering for users. They can choose from DRAM, FPM DRAM, EDO DRAM and burst EDO DRAM. And that's just on the desktop. Many portable systems have their own specialized memory modules, and servers

Memory, page 49

### Digital's duo

Digital's latest workstation additions include the Alpha XL 300 and Alpha XL 366

#### Processor

300-MHz Alpha 2116 (Alpha XL 300); 366-MHz Alpha 21164A (Alpha XL 366)

#### Minimum/maximum RAM

32M/512M bytes

#### Cache

2M bytes

#### Storage

Up to 12G bytes

#### I/O slots

2 PCI, 2 ISA and 1 combo

#### Starting price

\$8,495 (Alpha XL 300);  
\$9,995 (Alpha XL 366)



Sun's Ultras boost the company's market share.  
See page 49.



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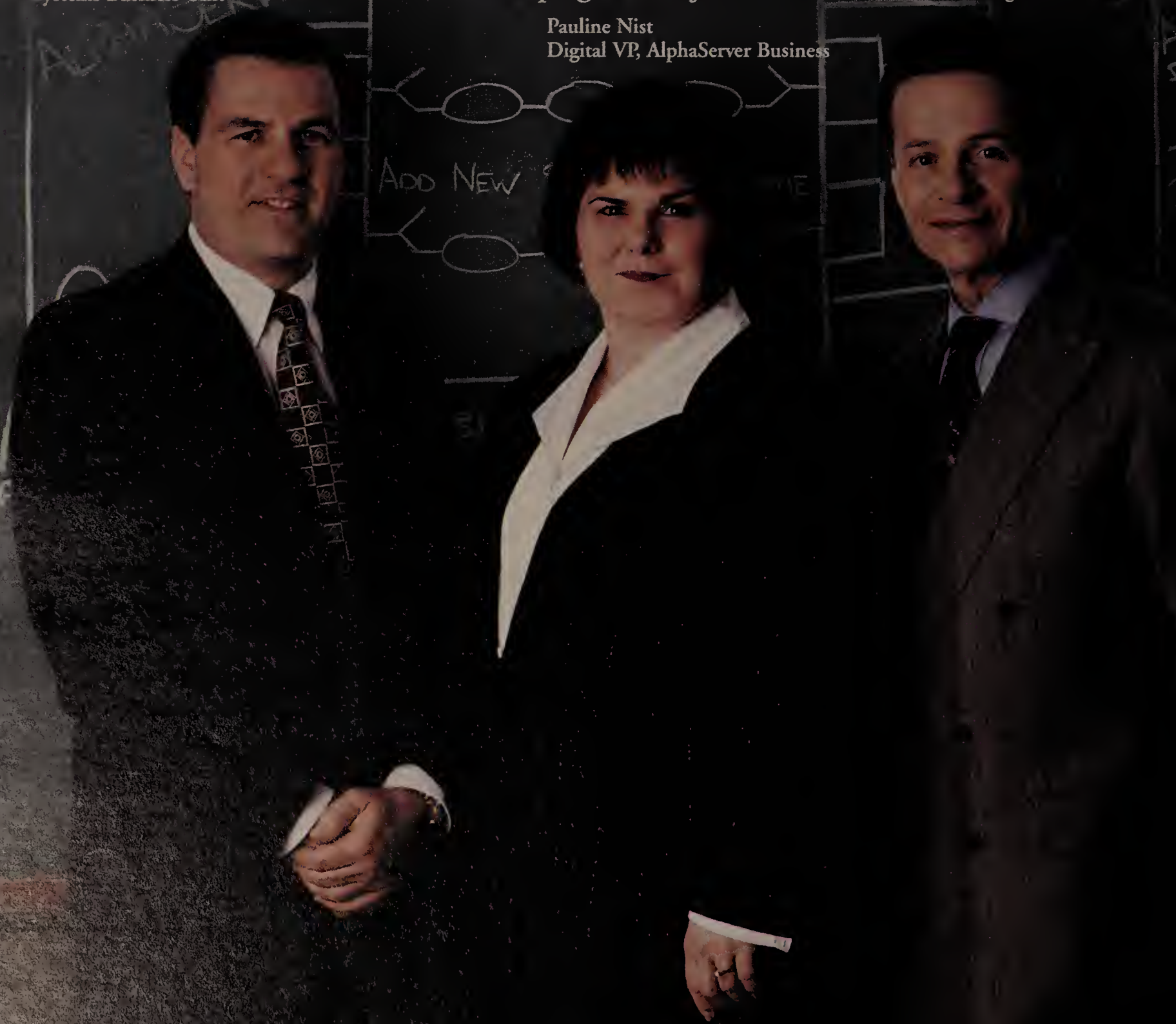
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Digital VP & General Manager  
Systems Business Unit

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Pauline Nist  
Digital VP, AlphaServer Business

*"Oracle has an excellent record for seeing the future clearly, so to have them running their most critical applications on the AlphaServer platform is a tremendous endorsement. We're truly flattered."*

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Digital Chairman, President & CEO



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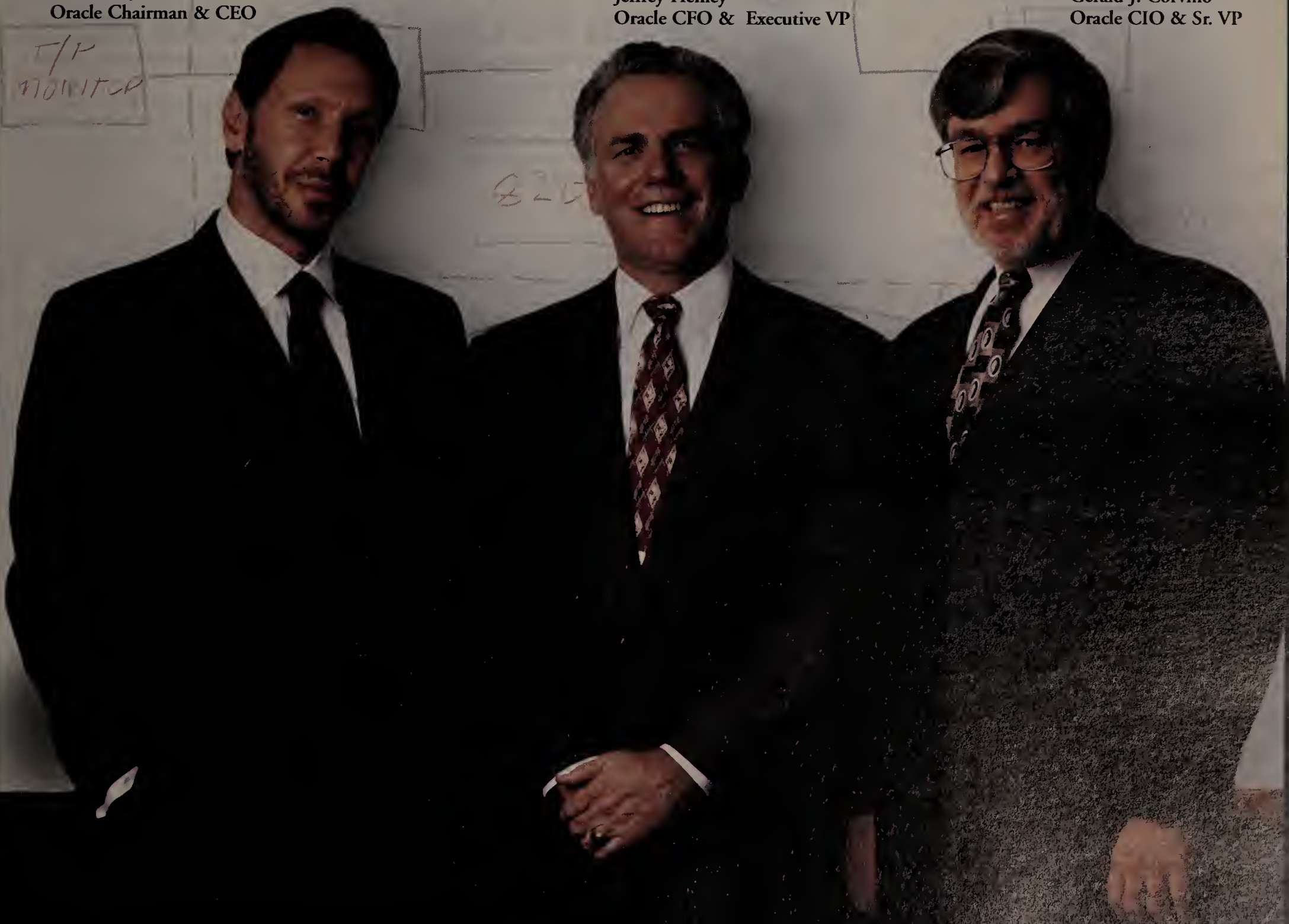
Lawrence J. Ellison  
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WEEK 16 OF 19



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3. On the Web site Entry Form, identify the page number in this week's issue of COMPUTERWORLD where the correct answer to each TechnoTrivia question appears.
4. Or you may enter by fax using the Fax Entry Form below.

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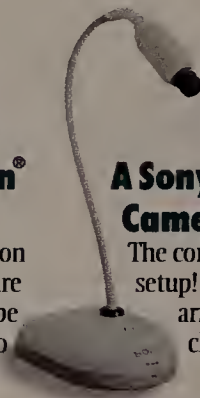
Win a 4-day cruise to the Bahamas for two aboard Carnival Cruise Lines. While onboard, all five winners will be awarded a new AcerNote™ Light notebook with Pentium® processor — plus a treasure map with all the clues you need (if you're really quick) to solve the ultimate TechnoTrivia puzzle and earn a \$5,000 cash reward!



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Grand, First and Second Prize Winners will be announced by July 15, 1996.



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## 5 Dunkin' Donuts "TechnoTrivia™ Tuesday" Coffee Breaks

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Please pass along this issue of COMPUTERWORLD to an associate after you have finished playing the game.

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## This Week's TechnoTrivia™ Questions

*Find the answers in this issue of Computerworld*

1. "Spamming" on the Internet derives its name from what source?
2. According to *Scientific American*, how many times faster will tomorrow's protein-based computers be than today's silicon-based computers?
3. In what movie did Robert Redford lead a team of reformed computer hackers?
4. What does BIOS stand for?
5. The Intel 8080 came out in what year?

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# Sun quick to cut 64-bit Ultra prices

By Craig Stedman

Less than six months after it shipped its first 64-bit workstations, Sun Microsystems, Inc. is already turning on the blue light special sign.

Sun in late April slashed prices on its Ultra models to stay on the cutting edge of workstation price/performance.

The price of the midrange Ultra 1 Model 140 was cut by 39% to under \$10,000, while the price of a high-end multiprocessor was reduced even though it hasn't become available yet.

Several new models also were added to round out the top of the Ultra line, which was introduced last November.

Industry analysts said the UltraSPARC-based machines have been strong sellers for Sun. But rivals such as Digital Equipment Corp. and Silicon Graphics, Inc. this year have launched new machines that pose competitive threats at the midrange and high-end levels.

Users welcomed Sun's quick draw on pricing.

Steve Grandi, manager of central computer services at the National Optical Astronomy Laboratories in Tucson, Ariz., said the lower cost of the Model 140 should prompt the labs to pick up the pace at which they are switching from older SPARCstations to the Ultras.

Grandi has bought a few 140s so far and is waiting to get one of the Ultra 2 Model 2200 multiprocessors, which are scheduled to ship this quarter.

But one potential roadblock to a wholesale migration is the need to also switch to the new Solaris 2.5 operating system, Grandi said. Most of the lab's 150 workstations still run Sun's older SunOS software, and changing to Solaris 2.5 is no small upgrade. "You have to keep your eyes open when you do that," he said.

## Cutting competition

The speed at which Sun cut the Ultra pricing might seem fast, but

the workstation market "is a ferociously competitive environment right now, and all of the vendors are willing to sharpen their pencils if they have to," said David Pensak, a senior research fellow at DuPont Co. in Wilmington, Del. "I have sympathy for those guys — but not too much."

Pensak is about to order one of Sun's Model 2200s for use as a server in DuPont's computer sciences research group. Besides the lower cost of the model, announced last fall, he said he was glad to see Sun reduce the memory requirement from 256M bytes to 64M bytes — a move that dropped the starting price from about \$60,000 to \$37,495. DuPont needs the full 256M bytes, but

Pensak said he can save even more money by buying the extra memory and disks from third parties.

**Before and after**  
Pricing for Sun's UltraSPARC-based workstations

MODEL	CPU SPEED	OLD PRICE	NEW PRICE
Ultra 1 Model 140	143 MHz	\$16,495	\$9,995
Ultra 1 Model 170	167 MHz	\$22,995	\$19,995
Ultra 1 Creator Model 170E	167 MHz	\$25,995	\$22,995
Ultra 2 Model 2200 Creator 3D*	200 MHz	\$59,995	\$52,495

\*Dual-processor system

## Aggressive move

Sun's new pricing "is extremely aggressive," particularly on the Model 140, said Tom Copeland, an analyst at International Data Corp. in Framingham, Mass.

The closest midrange model that offers comparable performance is a Digital AlphaStation

that starts at \$11,995, he said.

Sun's workstation market share increased slightly last year, thanks largely to the Ultras, Copeland said.

"You don't typically see [price cuts] this close to the original announcement, but I don't sense any desperation," he said.

However, the Ultras "are no longer so far up the totem pole" on performance after the recent Digital and SGI rollouts, Copeland added.

## Only a memory

New memory configurations available for PCs

	STATUS	USED FOR	DRAWBACK
<b>Fast page memory DRAM</b>	In most current systems	16-bit applications	Bottleneck for multimedia and high-performance applications.
<b>EDO DRAM</b>	In most high-performance systems	16-bit and 32-bit applications	Systems needs outpace the technology.
<b>SDRAM</b>	Just hitting the market	32-bit multimedia applications	In short supply. Some standards issues.

## Memory technology moving to SDRAM

CONTINUED FROM PAGE 45

tend to often use error correcting and checking EDO RAM.

"When I look at some of the choices of what's out there, it could be a real headache if you don't know what you're looking for," said Erik Goldoff. He is manager of information systems at the enters for Disease Control in Atlanta.

## Coming in June

Most of the new systems that will be announced with Intel Corp.'s 200-MHz Pentium processor in June will include SDRAM. SDRAM uses an internal clock to synchronize signal input and output on the memory chip, which keeps the processor and the

memory in "sync." That saves time in executing commands and transmitting data.

Only Dell Computer Corp. in Austin, Texas, and Toshiba America Information Systems, Inc. in Irvine, Calif., are shipping systems with SDRAM.

IBM PC Co., Compaq Computer Corp. and Gateway 2000, Inc. plan to add systems with SDRAM soon. And by the fourth quarter, most high-powered PCs will include the new kind of memory, MacDonald said.

## Faster graphics

SDRAM will matter more late this year, as Intel adds multimedia aspects to its PCs via its multimedia extension and its accelerated graphics port (AGP) platforms.

The recently announced AGP opens a 32-bit data path between a graphics card and the PC's DRAM controller. That allows direct access to system memory necessary for three-dimensional graphics rendering. Most graphics cards and chips use their own memory, which slows overall system graphics processing.

According to Mike Feibus, an analyst at Mercury Research in Scottsdale, Ariz., those systems will require at least 16M bytes of DRAM.

"When you're accessing memory directly for 3-D, you'd need at least that much for adequate performance," Feibus said. SDRAM will increase the graphics processing speed even more on those AGP systems, he said.

## Digital pits NT against Unix

CONTINUED FROM PAGE 45

Brown and Associates in Port Chester, N.Y.

David Krauthamer, manager of information systems at Parker Hannifin Corp. in Rohnert Park, Calif., said he welcomed the latest additions to Digital's XL lineup. The speedy Alpha workstations are needed because most PC servers today lack the horsepower to run large Windows NT applications, he said.

"If you are trying to run a database application in an [NT-based] PC server environment, you quickly run out of juice. You really need something faster," he said.

## Niche markets

Digital officials last week said that initially, at least, the company expects the new workstations to be popular in the computer-aided design, mechanical design, engineering, scientific and education markets.

"It is a really cost-effective platform for us. It complements our existing Macintosh platform wonderfully," said Richard Navin, director of the Image & Communications Project at Brooklyn College in New York. The college uses an XL system to teach computer animation courses.

Digital's latest systems come

with several performance-enhancing features, such as a large 128-bit memory bus, a 32-bit Peripheral Component Interconnect I/O bus and Fast SCSI drives.

Prices start at \$8,495 for an Alpha XL 300 with 32M bytes of memory and 1G byte of hard disk space. The system will be available immediately. An Alpha XL 366 with the same configuration will start at \$9,995. It will ship late this month, Digital officials said. Prices don't include monitors.

## Brief

### Amdahl to couple 32 mainframes

Amdahl Corp. this summer will offer a CMOS-based Millenium Coupling Server to link up to 32 mainframes in a shared-storage Parallel Sysplex environment. Along with the coupling server, Amdahl, based in Sunnyvale, Calif., next year plans to open an Enterprise Computing Center to demonstrate and test Parallel Sysplex configurations.



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# HP resellers will assemble systems

By Ron Condon

Hewlett-Packard Co. plans to speed up delivery of its PCs by appointing systems integrators to do final assembly.

The resellers could soon be handling 30% of HP's total professional desktop PC business, according to Emilio Ghilardi, recently appointed marketing manager at the Corporate PC Division of the company.

"We are winning a lot of big PC contracts, but the dealers tell us we are missing out on follow-up business because we cannot deliver fast enough," Ghilardi said. The company currently takes about four weeks to deliver products to resellers.

The way to streamline delivery, Ghilardi said, is to appoint a series of resellers who are capable of putting together systems according to customer requirements within a short period of time.

The integrators will have access to a local inventory of basic systems plus parts that HP will own and replenish.

"We do not expect the franchisee [reseller] to carry the cost of the inventory," Ghilardi explained. "The industry has still not learned to play the inventory game. The deal is not to stuff the channel but to integrate the channel."

The appointed resellers will have access to HP's SAP AG inventory system and will link into it on a daily basis to record deliveries and sales. To ensure quality, they must have International Standards Organization 90000 quality registration, Ghilardi said. This will limit the number of resellers.

"I expect to have about 10 resellers franchised in Europe, but they could account for around 30% of business," Ghilardi said. "The model is workable in the corporate PC market, because resellers normally

open 80% of the boxes anyway."

The move comes as part of a redesign of the company's supply chain management, which Ghilardi said can help to give HP the edge it needs.

HP will continue to climb the technology hill, he said, continually adding new fea-

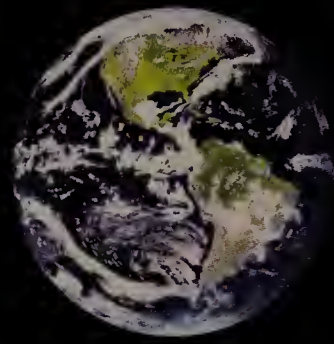
tures at no extra cost. But Ghilardi said he believes service to customers — and equally important, return on capital invested — can be noticeably improved by changing the supply chain.

The company has been trying out the franchise idea in the U.K. with one reseller

for the past year.

"We found we have been able to keep lower inventories while fulfilling 96% to 97% of orders," Ghilardi said.

Condon is a London correspondent for the IDG News Service.



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## Brief

### IBM boosts attack on SCSI

IBM expanded the capabilities for its Unix server disk subsystem based on the Serial Storage Architecture (SSA), a high-speed interface vying to replace industry-standard SCSI technology. The technology contained in a server adapter card will allow users of 7133 disk arrays to connect up to eight RS/6000 servers to shared storage up to 3.5T bytes. The adapter card costs \$2,000 per server and gives access to stored data at a rate of approximately 35M byte/sec. for each card installed, according to IBM. The technology also works with the 7131 MultiStorage Tower Model 405, and IBM plans later this year to bring SSA to RAID-5 storage arrays and to servers running on Windows NT and non-IBM Unix servers, said Alan Petersburg, a product manager at IBM Open Systems Storage in San Jose, Calif.



## New Products

**Boffin Ltd.** has rolled out the JB321 and JB749 CD-ROM jukebox towers.

According to the Burnsville, Minn., company, the JB321 is a 21-disc jukebox with three CD-ROM readers. The JB749 is a 40-disc jukebox with seven readers. Each jukebox has a SCSI-2 port for connection to

a host system. The number of jukeboxes connected to a server is limited only by the number of controllers that can be installed in the server.

The JB321 includes software for MS-DOS, Windows 3.1 and Windows NT systems, with a drive letter available for assignment to each of the 21 CD-ROMs. The JB749 requires network management software for NetWare and Windows NT that lets CD-ROM drives appear as subdirecto-

ries of a single drive letter.

Pricing for the JB321 starts at \$1,699. The JB749 starts at \$3,499. More information is available through Boffin's home page at <http://boffin.com>.

► **Boffin**  
(612) 894-0595

**Adaptive Information Systems, Inc.** has introduced the AdaptStor family of storage management systems for distributed cli-

ent/server applications.

According to the Mission Viejo, Calif., company, the AdaptStor family combines an optical jukebox subsystem, a RAID subsystem and automated hierarchical storage management (HSM) software into one system.

The jukebox features a maximum capacity of 501G bytes and supports standard 5¼-in. magneto-optical drives. It supports most popular operating systems, including Sun Microsystems, Inc.'s Solaris, Hewlett-Packard Co.'s HP-UX, Novell, Inc.'s NetWare and Microsoft Corp.'s Windows NT.

The RAID subsystem features large-capacity 3½-in. disk drives and nonvolatile cache memory of up to 256M bytes to support a variety of configurations. Each model can simultaneously support multiple operating systems. The HSM software provides transparent file migration and direct access to optical and tape libraries.

Pricing for an AdaptStor system starts at \$46,300.

► **Adaptive Information Systems**  
(714) 587-9077

**Ideal Scanners & Systems, Inc.** has introduced DSP3 Series Scanners, a series of high-resolution, large-format scanners.

According to the Rockville, Md., company, the new scanners use multiple cameras with the 8000 element, a high-resolution tool that helps reduce scanning time. All models include a 32-bit controller.

The DSP3 series includes autoloader, auto-scan, autowidth and autolength features. It supports DOS, Windows and Unix environments. Pricing starts at \$15,900. More information is available on Ideal's home page at <http://www.ideal.com>.

► **Ideal Scanners & Systems**  
(301) 468-0123

**Olympus Image Systems, Inc.** has introduced Olympus CD-R2, an internal CD-Recordable drive.

According to the Melville, N.Y., company, Olympus CD-R2 is a double-speed, multisession CD-Recordable drive that was designed for audio recording, archiving and multimedia development.

Olympus CD-R2 includes CD mastering software, one 74-min. blank CD, mounting hardware and a caddy. It supports popular formats including CD-ROM, CD-ROM mixed mode, CD-Plus Enhanced CD and Photo CD. It conforms with recording standards including Disc-at-Once, Track-at-Once, Fixed and Variable Packet.

Pricing for Olympus CD-R2 starts at \$899.

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State of Alaska  
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Lotus Soft-Switch  
eschews bundling, adopts  
software-only stance, 58

# Software

## Old, new viruses swarm PC users

By Gary H. Anthes

If you have 1,000 PCs in your organization, you can expect to get hit by a computer virus about 120 times this year.

So says the National Computer Security Association (NCSA) in its "1996 Computer Virus Prevalence Survey." According to the poll of 300 midsize and large companies and government agencies, the chances of encountering a virus today is about one in 100 PCs per month, about five to 10 times higher than early last year.

Occurrences of older viruses such as Form and Stealth have increased, but the most dramatic rise is for the Word.concept virus, a so-called "macro virus" that was unknown just a year ago. It infected 36% of the sites surveyed and was responsible for half of all virus encounters.

Word.concept rides in documents created by Microsoft Corp.'s Word. Unlike other viruses, which typically load when a user boots from an infected floppy diskette, Word.concept macro code can travel as electronic mail. It can infect a PC when the document is opened.

"There is no question the No. 1 [virus] threat today is from macro viruses," said a security manager at a Fortune 100 manufacturer. He said his company, which he asked not to be named, had set up a very strong, centralized computer incident response office where users can go for help. That's lacking at many companies, he said.

The companies surveyed said three-quarters of viruses came from diskettes, and 15% came from unknown sources. Nine percent of the viruses came from E-mail attachments, which weren't a virus source before the creation of the Word.concept virus last year.

"Electronic mail and viruses weren't even an issue a year ago," said Peter Tippet, president of the NCSA in Carlisle, Pa. The NCSA estimated total losses in North America due to computer viruses last year at \$1 billion. They will amount to \$2 billion to \$3 billion this year, according to the NCSA.

In the survey, which was co-sponsored by Cheyenne Software, Inc. in Roslyn Heights, N.Y., 97% of companies polled said they use antivirus software.

"Most companies say they own antivirus software for most of their machines," Tippet said. "But what this boils down to is, people aren't using it."

### Continuous scan

Another problem, Tippet said, is that often a PC is scanned for viruses only when it is booted, which allows it to become infected and pass along a virus to other machines between scans.

He said users should employ continuously running antivirus software, particularly to catch the new macro viruses.

The Alabama Department of Revenue, which doesn't use Word, is seeing virus incidents at the rate of just four per year on its 1,500 PCs. It uses a continu-



### Virus ruckus

#### MOST COMMON VIRUSES

Word.concept	49%
Form	15%
Stealth B or C	10%
Anti-EXE	5%
Monkey	4%
Other	17%

Base: 13,274 virus infections reported by 300 companies in January and February

#### EFFECTS OF VIRUSES

Loss of productivity	81%
PCs unavailable	71%
Message lock-up	62%
Corrupt files	59%
Lost data access	49%
Lost data	39%
Unreliable applications	35%
System crash	30%

Base: 300 companies reporting on latest virus incident. Multiple responses allowed.

#### COST OF VIRUS INCIDENT

Less than \$1,999	62%
\$2,000 to \$9,999	20%
\$10,000 to \$99,999	15%
More than \$100,000	3%

Base: 300 companies reporting on latest virus incident

Source: National Computer Security Association, Carlisle, Pa.

ously running scanner on most of its OS/2 and Windows machines, said Jan Schultz, manager of computer security.

Tippet said users should put anti-virus software on servers and client machines. Most older viruses couldn't

reach a server unless it was booted from an infected floppy disk, so running anti-virus software on the server had little value. Now that viruses can easily reach servers via transmitted documents, users should protect them as well, he said.

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## Tools vendors offer their support to NT

By Bob Francis

The Windows NT shopping aisle marked "systems management tools" is looking more fully stocked.

Several vendors that have traditionally focused on Unix systems are porting their tools to Microsoft Corp.'s Windows NT environment. Customers will be able to use tools with which they are already familiar for NT.

Systems management vendors, including Platinum Technology, Inc. in Oakbrook Terrace, Ill., Tivoli Systems, Inc. (now part of IBM) in Austin, Texas, and Boole & Babbage, Inc. in San Jose, Calif., have announced support tools for Win-

NT support, page 64

## Scaling is no problem for NT Server upgrade

By Laura DiDio

To the relief of some users, the current version of Microsoft Corp.'s Windows NT Server 3.51 has slain the scalability demons that plagued prior releases of the network operating system.

Mike Nash, group product manager for Windows NT Server, acknowledged that Windows NT Server 3.1 had difficulty scaling

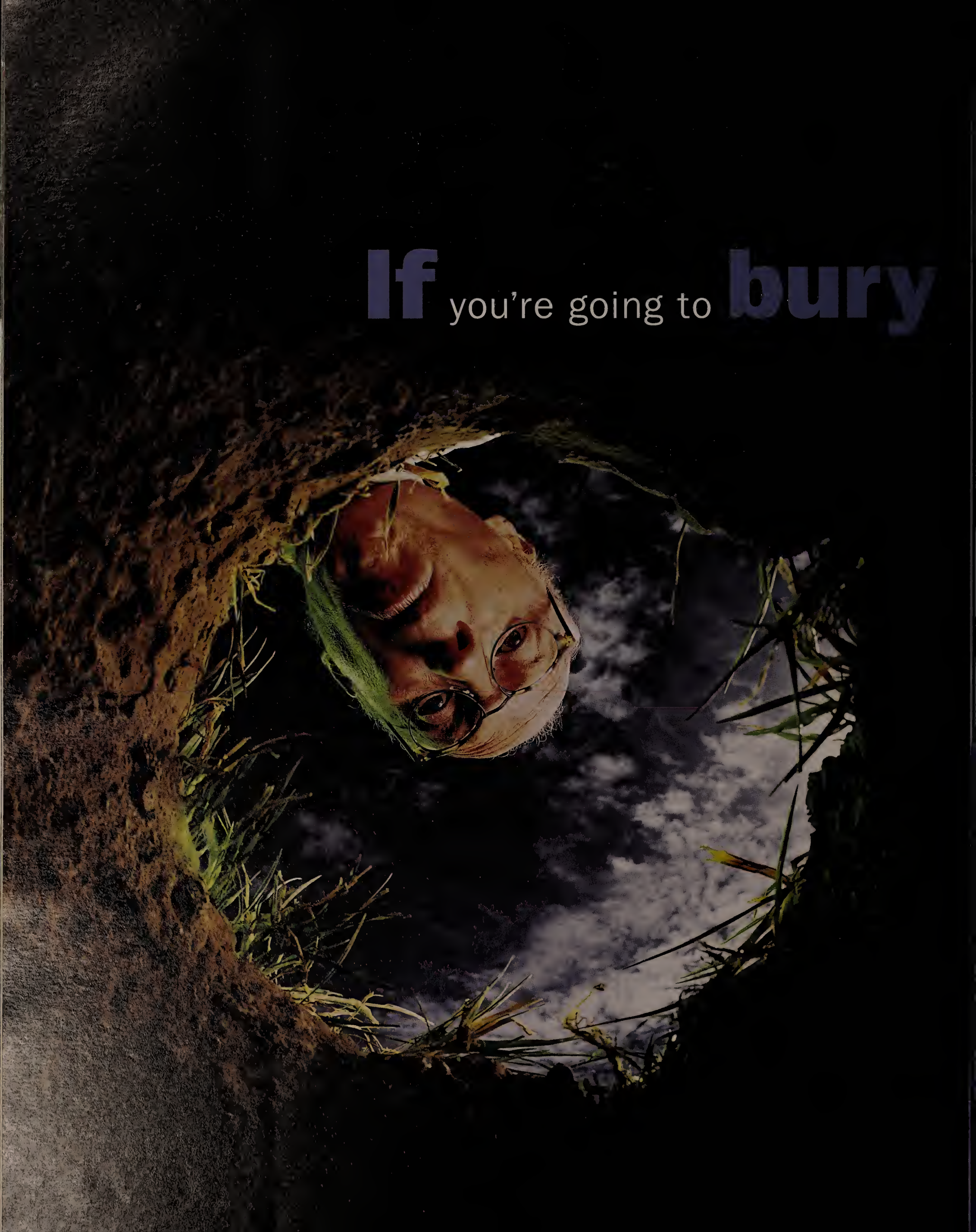
beyond four processors in 1993. Anything beyond that degraded performance significantly.

That was the experience of one administrator at an insurance firm in the Midwest, who requested anonymity. "It was the typical early adopter's nightmare: We wanted a powerhouse [network operating system] to process claims from our insured customers nationwide. And when we tried to

NT Server, page 58



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# Oracle, Radley will merge wares

By Juan Carlos Perez

Vehicle parts manufacturers will have a new software supplier by year's end: Oracle Corp.

Oracle is merging its manufacturing applications with products from specialty software supplier Radley Corp. in Southfield, Mich. Radley makes the Computerized Automotive Release Accounting System (CARAS), inventory software that tracks how many parts have been manufactured.

CARAS also includes electronic data interchange (EDI) interfaces tailored to parts manufacturers that communicate with their customers via EDI.

Radley's package also helps to ensure that automotive parts are delivered to customers and unloaded in the correct order.

There has never been a formal integration between a specialty supplier such as Radley and a major vendor such as Oracle in the EDI/release accounting arena, said James Shepherd, vice president of research at Advanced Manufacturing Research, Inc., a consultancy in Boston.

By acquiring a minority posi-

tion in Radley, Oracle is clearly saying it intends to become a leading vendor in the automotive industry, Shepherd said. "It makes customers feel a lot safer" to have a brand-name vendor such as Oracle in the market, he said.

The Center for Advanced Technologies of Focus Hope, a non-profit group based in Detroit, Mich., is anxiously awaiting the

ventory system. Once an order is received, the system will automatically let plant employees know what materials they will need to complete the job.

The system also will order the needed materials and send advance shipping notice to their customers to let them know when the job will be complete.

Radley and Oracle plan to fully merge their wares in two steps. Before the end of the year, Radley's CARAS software will link to Oracle's manufacturing application suite. Oracle plans to release a manufacturing application next year that includes CARAS features.

Hayes Wheels, a wheel manufacturer in Romulus, Mich., will switch from its mainframe system to the Oracle/Radley client/server offering scheduled for next year.

Hayes Wheels has used the CARAS system at one of its six plants, said John Bodish, MIS director. He said CARAS lets employees generate on demand and in real time a variety of order placement reports that its mainframe system can't deliver.

product. The Focus Hope center, staffed by students, runs a manufacturing plant that does work for automotive companies.

Linda Hanks, information systems manager at Focus Hope, said the integrated Oracle/Radley software will work as a central in-

**Oracle and Radley's client/server EDI system will include the following capabilities:**



- Inventory management
- Shipping
- Bar coding
- Scanning
- Labeling

## NT Server

CONTINUED FROM PAGE 55

scale to eight processors, NT Server promptly crashed," the administrator said.

But times have changed. Windows NT Server users are giving the network operating system a much better scalability rating.

Rick Shope, manager of PC planning and technology at NationsBanc-CRT, a division of NationsBank Corp. in Chicago, said NT Server 3.51 scales more than previous versions he has used. Shope said he can support two to four times as many users with NT Server 3.51 as with earlier versions of the network operating system.

The operating system is being banged on by 1,200 users in the

main office and 800 remote users at NationsBanc's trading sites in Chicago, London, Tokyo, Singapore and Frankfurt.

"NT Server 3.51 is a lot faster and more scalable than prior versions," Shope said. "It's all relative. Based on my experience, I've found NT Server 3.51 to be more scalable than Novell NetWare and not as scalable as Unix — which has been around for 20 years."

Jim Snively, systems consultant at Sun Co. in Philadelphia, an oil company with more than 3,000 users throughout the U.S., also reported no scalability problems with his crop of NT servers.

Snively said he sidesteps even a hint of a problem by deploying multiple servers rather than trying to hang lots of things off one big server. "I don't want to hit a performance wall. And if we're architecting big LAN-based database applications which require a lot of horsepower, we'll make sure to allocate the necessary resources and servers. I'm taking no chances," Snively said.

Systems integrator Robert Harbison, president of Network Integration Consultants, Inc. in Sausalito, Calif., agreed that Microsoft and rival Novell, Inc. have vastly improved the scalability of their network operating systems.

But, Harbison said, "NT Server is a resource-hungry [network operating system] — you don't get a raft of features without some trade-offs." Businesses should be aware of that fact and plan accordingly, he said.

"If you're setting up your network to run file, print and database access on a single NT Server, don't plan on attaching more than 50 users [to the server] unless you want to risk dramatic slowdown in performance," Harbison said.

With the emergence of bandwidth-hungry client/server applications, the network operating systems vendors must keep improving, he said.

Computerworld senior editor Thomas Hoffman contributed to this story.



Basic input/output system

# Lotus division alters strategy

Soft-Switch adopts software-only stance

By Tim Ouellette

Lotus Development Corp.'s Soft-Switch division has announced plans to sell only software, dumping its practice of bundling its software with Data General Corp. hardware.

Soft-Switch, based in Wayne, Pa., also plans new management and monitoring software packages that will be sold separately from its Lotus Messaging Switch (LMS). The plan is to make the products available on more platforms than just DG's hardware.

LMS is a backbone switch that lets users connect disparate electronic-mail systems. It provides a central directory service for an entire E-mail network.

The product soon will support Hewlett-Packard Co.'s HP-UX

and IBM's AIX Unix operating systems. Stephen Layne, general manager at Soft-Switch, said Windows NT and OS/2 are also being considered.

With these announcements, users can choose whatever software pieces they need without burdening themselves with unnecessary hardware or software. Previously, LMS came bundled only with DG's Avion servers.

"That is very big for us," said Chris Benson, project manager for E-mail support at Deere & Co., an LMS user in Moline, Ill. "We are not a DG shop in general. You like to run a product on the operating system you are supporting."

"Thank God they did this, but how did it take them so long?" said Tim Sloane, an analyst at Aberdeen Group, Inc. in Boston. Sloane said he wondered how

Soft-Switch could be part of Lotus and offer only one platform, especially when Lotus' Notes runs on a multitude of platforms.

Observers said part of the problem with Soft-Switch's slow movement on the platform side has been the ongoing management changes and organizational restructuring at Soft-Switch since Lotus bought the firm in 1994. Lotus, in turn, was purchased by IBM last year.

Soft-Switch executives acknowledged that LMS' high price range — from \$100,000 to \$150,000 due to the hardware bundling requirement — also turned off many users.

With a software-only focus, pricing will be based on a per-connection rate. It will be part of Lotus' Passport pro-

gram for maintenance and upgrades. The new pricing scheme is expected to be in place by year's end. Officials said pricing would be lower than before, but no price ranges were provided.

Soft-Switch's planned management package, MessageView, will let end users track their messages from a World Wide Web browser.

The monitoring software, Mail Monitor 2.0, is in beta testing. It monitors the performance and reliability of the E-mail network. Pricing will be announced for the software when Soft-Switch revamps its LMS pricing scheme.

The release of Lotus Pages, an E-mail directory services agent, has been delayed indefinitely. It was originally intended to be bundled tightly with the LMS, Layne said.

### Making the switch

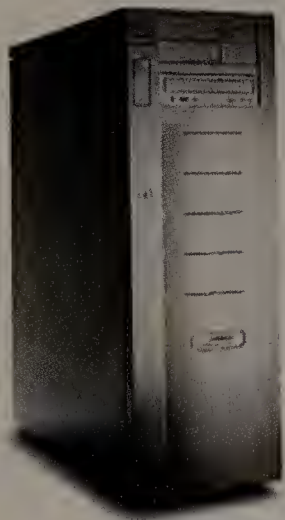
Lotus' Soft-Switch division has been slow to move but is making the following changes to catch up to the rest of the software market:

- Stop requiring the Lotus Messaging Switch (LMS) to be bundled with a Data General server
- Break out the management and monitoring software in LMS as separate products users can buy if they want
- Add support for HP-UX and AIX platforms and possibly Windows NT and OS/2
- Price LMS in line with Lotus' other products, including the products in Lotus' Passport maintenance and support program



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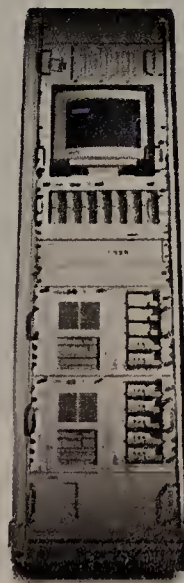
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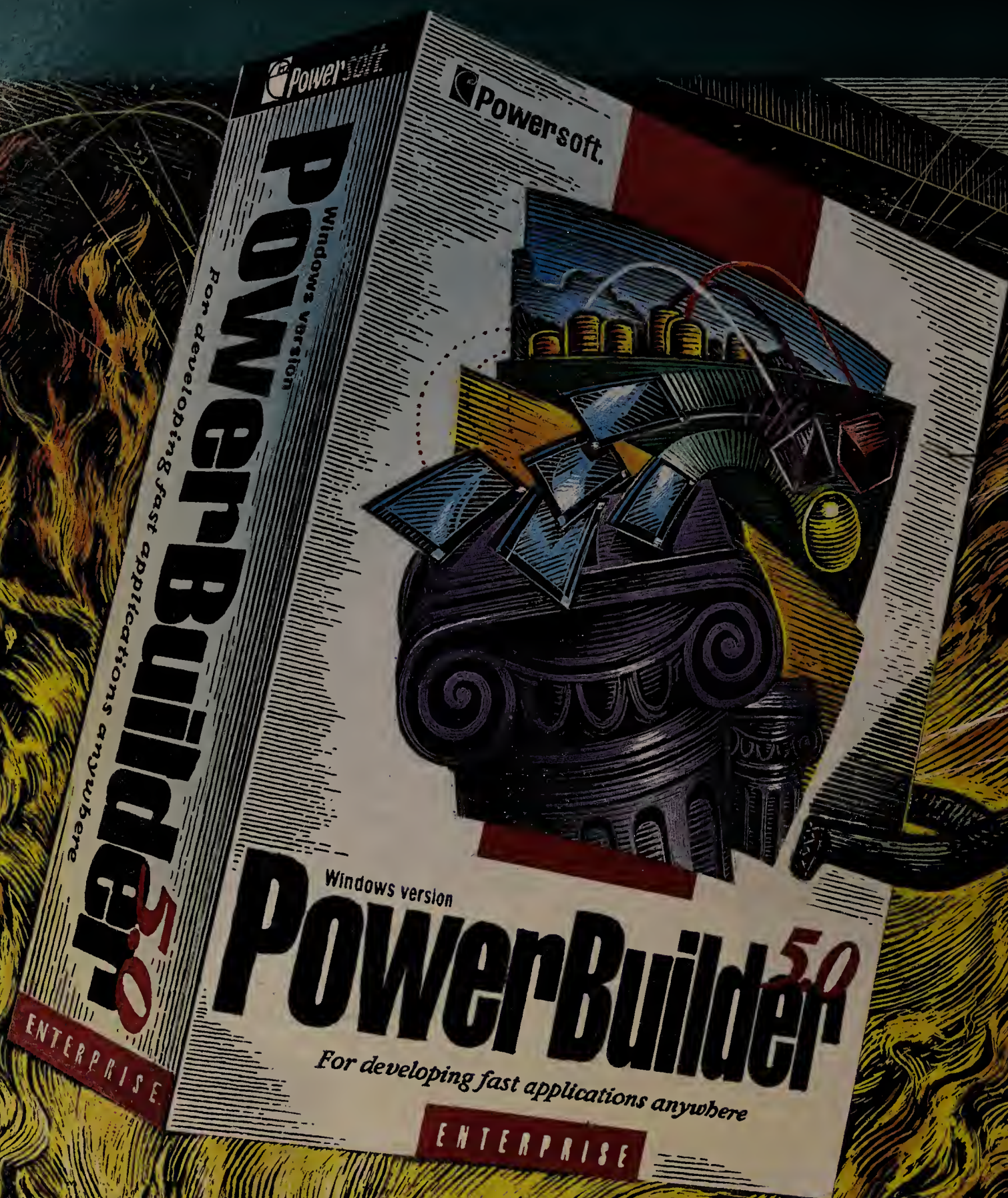
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# The reality of object reuse

Despite developers' hopes, reuse is a tough task

By Frank Hayes

Recycling isn't easy — at least when it comes to objects.

Corporate information systems shops are using object-oriented languages and tools in the hope that they can cut development time by reusing parts of existing programs when they build new applications. They're trying — but success is hard to come by.

"We're struggling with reuse," said Kirk Kness, systems architect at T. Rowe Price Associates in Baltimore, who acknowledged that his company is successful at reusing only standard libraries of code.

But at the enterprise level — where corporate developers hoped to recycle entire business models — "there's so much that has to go into it to get reuse that it's unfathomable at this point," he said.

"Back when we brought in object technology, reuse was one of the major selling points," said Bill Bedor, director of information technologies at Medtronic, Inc. in Minneapolis. "It sounded good on paper, but the opportunity for reusing business objects is not nearly what you would expect."

In fact, 74% of corporate IS shops say

reuse is the key benefit of object technology, according to a survey last year of 50 large companies by Forrester Research, Inc. in Cambridge, Mass.

Why such high hopes for object reuse? "Object technology allows me to be in a different business in five years than I'm in today," said Charles Nettles, director of technology for the information technology division of McKesson Corp. in San Francisco. Before objects came along, programmers needed to keep changing software as the business needs changed.

All business software mimics a business process, such as filling a customer's order. But object-

oriented programs can be designed so that each software object mimics a real element of the business, such as a customer, a salesclerk or an invoice.

## Cutting costs

Since many applications involve customers and invoices, once those elements have been designed, they should be easy to reuse. That in turn should cut the time and cost required to write applications.

But many corporate developers say they aren't getting as much reuse as they expected — or as quickly.



**Closer Look**

## Object-oriented development

## From the ground up

**B**uilding a reusable enterprise-wide business object model isn't just difficult for Bill Bedor. It's impossible — and not because his development staff at Medtronic isn't up to the task.

The problem is that, like many manufacturing companies, the medical device producer buys its software instead of building it whenever possible. So, Bedor's developers have no control over the business model used in many of Medtronic's enterprise applications.

"One thing we've learned about business-object reuse is that you don't get the reuse unless you extensively develop all your own software," Bedor said. "If your company's strategy is building all its own software, and it has a model of the entire business laid out ahead of time and a strategy of developing objects for that business model, then you can reuse business objects."

But companies such as Medtronic that use object-oriented development to supplement packaged software need help from software vendors, Bedor said.

"The package vendors have to make their objects accessible from the outside or turn packages into libraries of objects," he argued. "There are a lot of business objects in a package like that that we could reuse in developing our applications — a customer object, for example."

"But if the package is not object-oriented or the object is not compatible with the object technology we use, then it doesn't help us."

What's on Bedor's wish list for vendors? Create some sort of standard for what an object looks like and get most of the package manufacturers to follow that standard, he said. "But don't hold your breath waiting for it," Bedor said.

— Frank Hayes

"Because you're using already-tested, production-quality code, you've already pretested some parts of the system. You can expect the quality there during testing and into production."

— Susan Olszewski,  
MIS executive, AT&T



"After five years with objects, we are now putting together processes so that we are actually reusing components," said Andre Cassulo, principal systems integrator at Florida Power & Light Co., a division of FPL Group, Inc. in Juno Beach, Fla.

"But we've been most successful at reusing things that are common to every application — a print management system, a reporting system, a framework for how we build user interfaces," he said. "Business object reuse is a little bit more slippery."

"We are getting reuse because Joe over there told Brian about a class that he just wrote," Kness said. "It's not at the enterprise level."

Why not? One problem is that it's relatively easy to define a reusable screen or report, developers said. But it is much more difficult to create a model of a customer that can be used throughout the enterprise because the definition of "customer" can vary widely among applications.

Gaining reuse also requires more design work. "Reuse doesn't happen in a vacuum. You have to plan for it and schedule for it because it does mean more initial work," Cassulo said.

"During analysis you have to identify all the areas where you hope to get reuse, which builds in extra time up front," said Susan Olszewski, MIS executive at the EasyCommerce Services division of AT&T Corp. in Parsippany, N.J. "Then it takes discipline to actually take advantage of what you've designed."

That includes the discipline required to keep programmers from modifying components or rewriting the code from scratch instead of reusing them without change.

"How do we keep our developers from changing the code? A lot of the guys on our support team are big, and they're all mean," Olszewski joked.

Still, if object-oriented development hasn't often resulted in high levels of re-

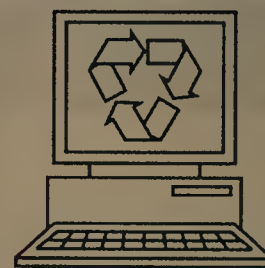
use, it has created some beneficial side effects. For example, reusing program screens makes it easy for developers to create applications with a standard user interface.

"Everything has the same look and feel throughout your application, and you get that consistency without having to depend upon artificial standards written down on paper that somebody may or may not follow," Bedor said.

Reusing components also means that code has already been tested, saving time in the quality assurance cycle. "Because you're using already-tested, production-quality code, you've already pretested some parts of the system," Olszewski said. "You can expect the quality there during testing and into production."

## Tricks of the trade

Tips for reusing object-oriented software assets



- Identify reuse opportunities during design, not implementation.
- Make sure your team understands how to build for reuse.
- Try to recycle components and frameworks, not code.
- Recycle patterns and style, which makes other kinds of reuse easier.
- Use examples to document how components are reused.

Source: Andersen Consulting, Chicago



“Now that my  
company is on  
the Internet,  
will a fancy  
port scanner  
algorithm make

# mincemeat

of my  
firewall?”

## DEFENSE

The Internet lets your company open its doors to millions of potential customers, partners and contributors and, unfortunately, some potentially dangerous hackers, crackers and online troublemakers.

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## New Products

**Adapt Technologies, Inc.** has announced Adapt 5.0, a client/server application development tool.

According to the Lexington, Mass., company, Adapt 5.0 lets designers create a blueprint for an application's flow without having to write code. Adapt 5.0 generates from the blueprint a Microsoft Corp.-compliant interface that follows outlined business process.

Adapt 5.0 builds application architecture that is divided into two parts: one with the presentation and flow, the other with the data logic and link to the database.

Pricing starts at \$8,000 per developer seat.

► **Adapt Technologies**  
(617) 863-5010

**Digital Instrumentation Technology, Inc.** has introduced TransferPro for Windows 95, file transfer software.

According to the Los Alamos, N.M., company, TransferPro for Windows 95 lets users read Macintosh files on a PC, preview a large number of graphic images and convert images from one format to another.

TransferPro for Windows 95 lets users write a Macintosh device driver to the disk or cartridge.

It also can read Macintosh-formatted CD-ROM drives.

TransferPro for Windows 95 includes graphic image views and converters.

It is compatible with Syquest Technology, Inc.'s EX135 drive, Iomega Corp.'s Zip and Jazz drives, magneto-optical drives, data shuttle drives and SCSI hard drives.

TransferPro for Windows 95 costs \$189. More information is available at Digital In-

strumentation Technology's home page at <http://www.dit.com>.

► **Digital Instrumentation Technology**  
(505) 662-1459

**Aris Corp.** has introduced Dfrag 4.0.

According to the Seattle company, Dfrag 4.0 is a sophisticated database defragmentation product intended to be used with Oracle Corp. databases.

The product was designed to eliminate maintenance tasks associated with fragmentation and data dispersion. It can help database administrators maximize space utilization and boost the performance of their Oracle databases.

Dfrag 4.0 includes Virtual DBA, a graphical interface with an integrated suite of tools, which lets database administrators manage from a single workstation multiple Oracle databases spread across multiple servers.

It includes a database object viewer, a security viewer and a performance monitor.

Pricing for Dfrag 4.0 starts at \$3,500 for a single license.

► **Aris**  
(206) 433-2081

### Product short

**Competitive Automation, Inc.** has introduced Join, software that automates the addition of computers, terminals and other devices to TCP/IP networks. Join software eliminates manual steps by assigning IP addresses and configuration parameters to machines that are moved or added to TCP/IP networks. Join is available for Sun Microsystems, Inc.'s SunOS and Solaris and Digital Equipment Corp.'s Unix. Cost: \$1,500 per server for up to 300 IP addresses. Competitive Automation, Menlo Park, Calif. (415) 321-4006.

# Data mining tool offers point-and-click interface

By Dan Richman

Data mining products often require that users type in formulas, and the products let users see results displayed as symbols that look like hieroglyphics. But a California start-up has released a data mining tool designed for use by businesspeople.

Mine Your Own Business (MYOB) from DataMind Software, Inc. in Redwood City, Calif., accepts queries that are created by pointing and clicking. It displays results in a Microsoft Corp. Word document or a Microsoft Excel spreadsheet or graph.

Data mining lets organizations confirm or refute theories about the data they collect. It also can detect unsuspected trends.

Unlike so-called "black box" data mining products — which don't reveal their inner workings or reasoning — MYOB has a "Why?" button that explains its conclusions.

### Easy to use

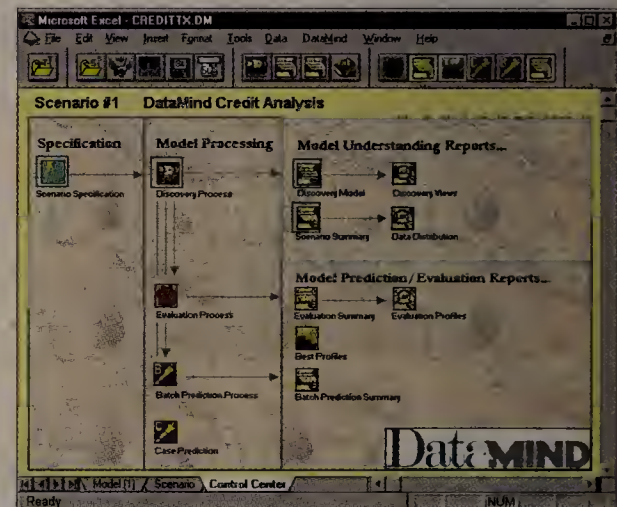
MYOB beta user Steve Brown, a statistical analyst at payroll service bureau Automatic Data Processing, Inc. in Roseland, N.J., said the software has been useful in determining whether to fix customers' hardware problems at a service center or on-site.

Brown is a trained statistician, but he said none of his training was necessary to use MYOB. He did say, however, that some basic knowledge of statistics is helpful.

Robert Moran, an analyst at Aberdeen

Group, Inc. in Boston, was more forceful on that point. "MYOB is pretty automated, but there's no way novice users are going to plug it in and start getting meaningful results. It requires study, maybe even a little consulting," he said.

MYOB servers run under Hewlett-Packard Co.'s HP-UX, Sun Microsystems, Inc.'s Solaris and Microsoft's Windows NT operating systems. Clients run under Windows



**DataMind Software's MYOB can help users crunch data and interpret results**

3.1 and Windows 95. Data is accessible from Microsoft's Open Database Connectivity-compliant database.

The Solo version of MYOB, for use by one person with a maximum of 3,000 records, costs \$2,459. The Professional version, which resides entirely on a PC, costs \$4,999. The Data Cruncher version processes data on the server and passes results to a client. It costs \$25,000 and up.

## NT support

CONTINUED FROM PAGE 55

dows NT. Hewlett-Packard Co. in Palo Alto, Calif., will roll out support later this year.

These announcements are good news for users who have needed NT wares. "It's looking better, but when you compare it to what's out there for NetWare or Unix systems, it still has a ways to go," said Erik Goldoff, information systems manager at the Centers for Disease Control and Prevention in Atlanta.

### Different perspective

As Windows NT moves into the mainstream, vendors are focusing not just on monitoring the operating system, but the applications themselves. That's the common thread between packages from Compuware Corp. in Farmington Hills, Mich., and New Dimension Software, Inc. in Irvine, Calif.

Compuware's Ecotools for Windows NT lets administrators monitor applications, Microsoft's SQL Server, the NT operating system itself and networks. The package looks for faults and performance problems. It also includes tools to diagnose, prevent

and correct application problems or failures. This can help administrators optimize performance and systems availability.

Ecotools for Windows NT will be available for beta testing this summer. Pricing will begin at \$23,000.

New Dimension this month shipped Control-M for Windows NT. Control-M lets systems managers automate the setup, scheduling and execution of processes that run on different computing environments, such as MVS, VAX, AS/400, Unix, Windows NT and OS/2. Prices start at \$20,995.

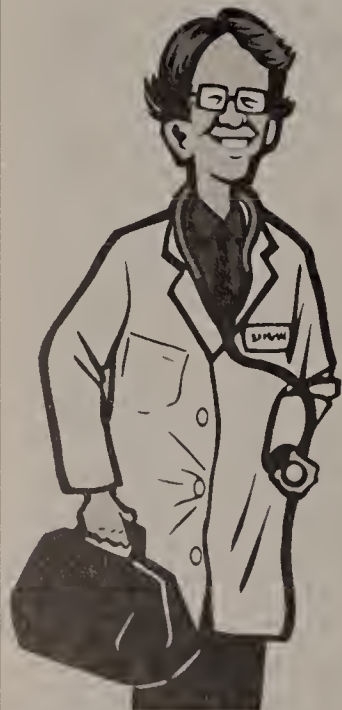
BMC Software, Inc. in Houston soon plans to add application-specific Windows NT tools, company officials said.

A user at a large forest products manufacturer in the Pacific Northwest said Ecotools for Windows NT will let him monitor NT networks in the same way that he tracks Unix networks.

"It gives us more control, which we'll need as we grow our NT installations," said the user, who requested anonymity.

Chet Geschickter, an analyst at Hurwitz Group, Inc. in Newton, Mass., says Ecotools' move to NT is one more indication of the strength of the Windows NT market. "We'll see more tools for NT shortly because this is where the market is growing," he said.

## MEDICAL ALERT... Insomnia Associated with Shell Script Programming



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# Evil Empire

“Now that my company  
is on the Internet,  
will I have to explain  
to management  
what a Resident  
Stealthed

virus is and  
why it brought down  
the New York office?”

## ANTIDOTE

Monkey. B... Queeg... Screaming Fist. Right now there are people out there making newer, smarter computer viruses at the rate of about four a day. And the more your company ventures onto the Internet, the more you open yourself up to attack.

Fortunately, we've got the world's leading antivirus researchers on our side: a whole lab of men and women whose aim in life is to thwart viruses before they can do damage. They've developed an integrated suite of antivirus products and services you'll find in our SecureWay™ family, including the most advanced security measures in industry history.

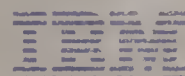
IBM AntiVirus software detects more than 6,800 strains of computer viruses, including polymorphic viruses and others previously thought to be undetectable. The system also provides false alarm elimination and infection verification. It will alert you to suspicious virus-like activity

anywhere on the network. And it works across multiple client/server operating systems from Windows® 95, Windows 3.1, DOS and OS/2® Warp to Novell NetWare® and Windows NT.™

As an IBM AntiVirus customer, you get signature updates, Bulletin Board support and you can subscribe to comprehensive quarterly software upgrades and get a fully updated antivirus product every three months, including the latest polymorphic fixes.

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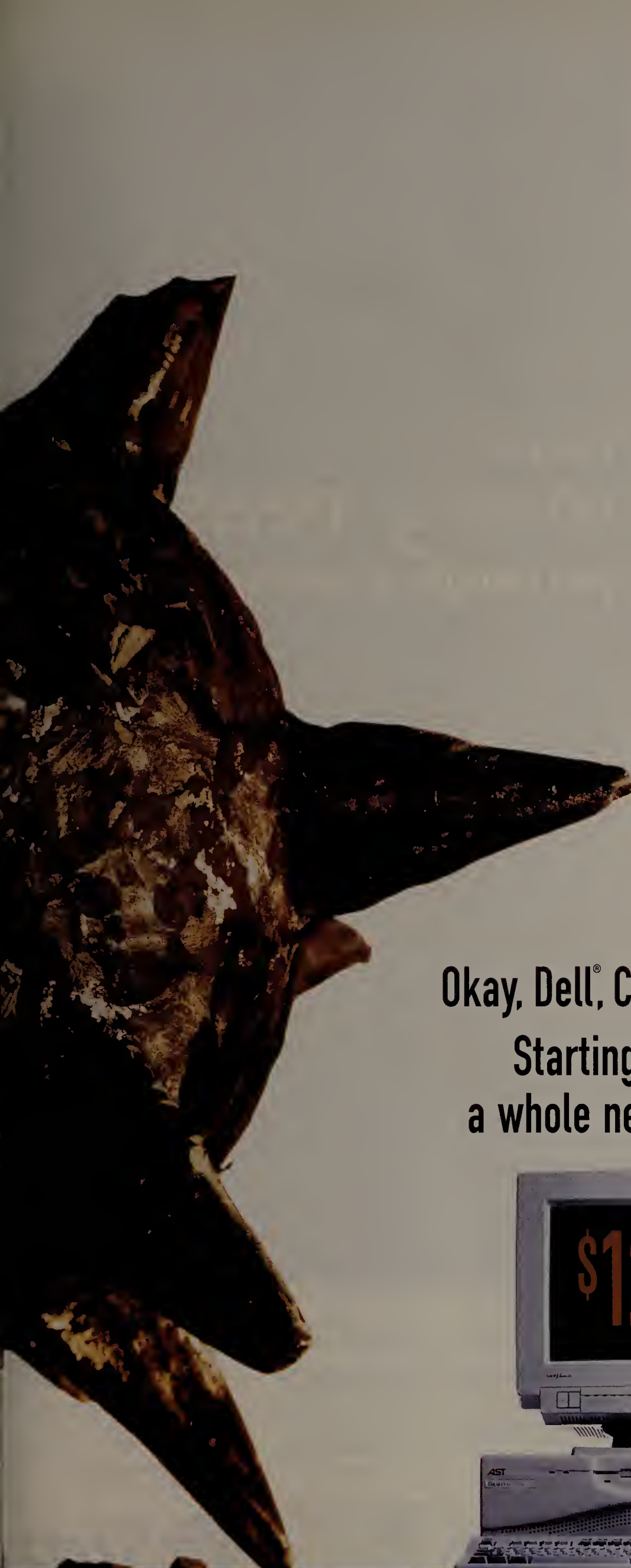




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# AST

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you bought a mainframe.

And  
**every reason**  
you didn't.

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THE NETWORK IS THE COMPUTER<sup>™</sup>



Users optimize data networks by outsourcing, 70

# The Enterprise Network

## Novell cozies up to 'net

By Laura DiDio

In a bid to bolster its Internet capabilities, Novell, Inc. has announced support for a new protocol that lets businesses use the Internet to access information stored in NetWare file servers.

Novell will release full support for the Lightweight Directory Access Protocol (LDAP) this fall, according to Vic Langford, senior vice president and general manager of Novell's Internet/Intranet Business Services unit.

"We're opening up NetWare and access to all of the services of NDS to the Internet," Langford said.

### Support for a lightweight

LDAP is an emerging directory access standard for the Internet that is expected to be adopted by the Internet Engineering Task Force. It was developed by the University of Michigan as a scaled-down version of the more powerful Directory Access Protocol (DAP). The LDAP protocol was designed to provide MS-DOS, Windows and Macintosh systems with a so-called "thin client" capable of accessing the Internet.

### Lightweight Directory Access Protocol support opens NDS to the Internet

#### Novell support for the Lightweight Directory Access Protocol will:

- ✓ Let browsers and applications find and use NDS resources via the Internet
- ✓ Let developers use one set of APIs to write to LDAP and NDS
- ✓ Give independent software vendors and end users native TCP/IP access to NDS without requiring Novell to re-architect NetWare or NDS
- ✓ Let companies use any standard browser to access, browse and query NDS for names, E-mail addresses and device information

By contrast, support for the more robust X.500 DAP protocol was designed to give higher-end Unix machines wide-area access. DAP requires a system equipped with about 500K bytes of memory, which is prohibitive for most desktop machines. The amount of memory LDAP requires varies by application, but Langford estimated it ranges from 25K bytes to 30K bytes.

Additionally, Novell's support for the LDAP protocol will let software application developers create NetWare Directory Services (NDS) applications by

using one set of application programming interfaces, Langford said.

Jamie Lewis, president of Burton Group, Inc., a Salt Lake City consulting firm, said Novell's support for LDAP is a win-win situation for Novell and its users. By supporting LDAP, Novell is opening NDS and extending it to support interoperability on the Internet, intranets and LDAP applications, he said.

Users agreed with that assessment. Gary Wilkerson, supervisor of end-user services at Kaiser Permanente Health Plan, Inc. in Atlanta, which has some

40,000 NetWare users companywide, said Novell's support for LDAP will be "crucial" to its users.

Kitty Bridges, director of product development and deployment at the University of Michigan's Information Technology Division, a large NetWare 4.1 shop, also said it's important.

"The more ubiquitous LDAP becomes, the more useful it is to the University and other enterprises that want to use the Internet to access NDS services," she said.

Langford said support for LDAP is part of the Orem, Utah-based firm's strategy to "make the network smarter" by letting people and businesses easily access applications and make NDS a pervasive directory services engine.

Novell's support for LDAP will let users deploy NDS to support multiple applications and services. "The support for LDAP means that I'll be able to use NDS to support a variety of services and applications," Wilkerson said.

But LDAP has some limitations. The protocol doesn't include a strong security authentication. But it complements NetWare's NDS, which has strong security features embedded within.

NetWare support for LDAP will be available this fall. Pricing and packaging haven't been announced.

## Plaintree Systems to tap high-end switch mart

By Bob Wallace

While most vendors are flocking to the low-end switching market with small "feature-challenged" boxes, Plaintree Systems, Inc. is headed in the other direction.

The midrange switch maker in Waltham, Mass., is continuing to battle the price-slashers on the low end. But now it's entering the high-end switching market, aiming to offer more features than its far larger rivals and to price some of those products well below theirs.

One Plaintree systems integrator and user said he expects customers to remain loyal. "We would definitely consider the new switches, to which only 3Com comes close," said Joel Weinbach,

senior vice president at The Computer Group/US Connect in Columbia, S.C. "We've struggled to find products with the same feature package and haven't been terribly successful. And I believe that the other current Plaintree customers will do the same."

Weinbach said similar products cost less than the Plaintree boxes but have only a subset of the features. "The Plaintree products have rock-solid spanning tree support, which is lacking in other comparable products," he said.

Industry analysts said Plaintree's strategy is on the mark.

"Sure, they're fighting an uphill battle. But they've realized that the big users aren't looking for the lowest-cost option; they're

looking for one with loads of functionality," said Eric Hindin, an analyst at The Yankee Group, a consulting and research firm in Boston.

Built-in features, which Hindin said are rare in other switches, include several layers of virtual LANs to create logical LANs, Remote Monitoring (Rmon) for monitoring network health and a complete selection of high-speed uplinks for tying users to servers and backbone networks.

Hindin said that of the switching market's Big Four — 3Com Corp., Cabletron Systems, Inc., Cisco Systems, Inc. and Bay Networks, Inc. — only 3Com supports all the features Plaintree does. "We've seen a lot of 'slideware' on virtual LANs, but very little product," he added.

Slideware refers to vendor presentations that talk about ad-

### Catch the Wave

#### Plaintree's new switch wave . . .

MODEL	SLOTS AND PORTS	PRICE
WaveSwitch 4800 for data center	8 slots	\$29,995
WaveSwitch 1216 for departments	16 switched Ethernet ports, two open slots	\$5,995
WaveSwitch 1018 for workgroups	16 switched Ethernet ports, two Fast Ethernet slots	\$4,995

#### . . . is beating the big boys on pricing per port

VENDOR	PRICE PER PORT	HUB
Cisco	\$5,000	Catalyst 5000
Cabletron	\$3,200	MMAC
Plaintree	\$2,295	1216 and 4800



# Firm offers cheaper way to optimize data networks

By Bob Wallace

Users of Network Equipment Technologies, Inc. (NET) switches now have a quick and easy way to optimize their data networks, which could mean savings of at least 10% per month on wide-area network charges.

Make Systems, Inc.'s Net-MakerSolution service offers NET users a more effective option than hiring a consultant and a much cheaper alternative to spending tens of thousands of dollars on equipment to optimize their networks themselves.

## Optimization route

Make Systems' technicians will perform a network benchmark to identify peak traffic times, heavily

used routes, quiet times and less traveled network paths. The latter could be used to support new applications or cut to save on WAN charges.

Pricing for the service, which was announced last week, will start at \$8,750. The process takes 15 days and was designed largely for NET users who want to outsource the complex network optimization effort.

"Large users are so tied up with the change involved with day-to-day network operations that they just can't do network optimization," said Daniel Briere, president of TeleChoice, Inc., a Verona, N.J., consultancy. "That's a shame because lots of users are paying for more capacity than they need."

One large NET switch user is eager to use the service.

"Our plan is twofold: We want

## Why users will want to optimize their WANs

■ Falling rates for popular data services such as frame relay

■ New and higher speed options for data lines

■ Telecom deregulation in which local carriers merge to offer services with great reach

■ Deployment of more client/server applications

■ Network expansion from mergers, acquisitions and divestitures

to see if we have enough bandwidth to roll out new client/server applications, and we want to see where we have too much bandwidth that could be cut to save our company money," said John Carpenter, director of telecommunications at PaineWebber, Inc. in New York. "Dropping one T1 alone [1.544M bit/sec.] could save us \$2,000 a month."

## Cost considerations

The hardware/software package large users would need to optimize their data networks can cost upward of \$50,000, and that doesn't include the many probes — which cost \$2,000 to \$15,000 each — needed to complete the package.

Network optimization is becoming

increasingly important as rates for data services such as frame relay have fallen, primarily because smaller carriers are looking to undercut prices of AT&T Corp., MCI Communications Corp., Sprint Corp. and LDDS WorldCom.

Competition will increase and drive prices down further as a result of the long-awaited and recent deregulation of the telecommunications services industry as local and long-distance carriers enter one another's markets.

Make Systems President Stephen Howard said users with rising bandwidth needs caused by capacity-greedy applications can stand to save by moving to the next highest speed service rather than buy in small increments.

## Cisco helps users cut costs on two fronts

By Bob Wallace

Cisco Systems, Inc. last week announced a product that obviates the need for users to buy stand-alone Ethernet hubs and another that makes it easier and cheaper to link Novell, Inc. NetWare LANs to the Internet.

Instead of tying desktop computers to regular Ethernet hubs and linking them to switches, Cisco's Group Switching Module eliminates the middleman by connecting those same devices directly to the company's highest-end switch.

The product, which will ship in July, combines hubbing and switching and works in Cisco's Catalyst 5000 switch. It can have up to 144 ports for less than \$100 per port.

"Users can save hundreds and thousands of dollars by using this module instead of buying loads of regular Ethernet hubs," said Eric Hindin, an analyst at The Yankee Group, a consulting and research firm in Boston. "It also helps simplify network management and administration."

The module also will let users build virtual LANs, which are logical rather than physical LANs. It comes with Cisco's Internetwork Operating Software, which is akin to a PC's operating system.

On another front, Cisco announced packages that will let information systems managers inexpensively give the estimated 50 million NetWare LAN users access to the Internet.

That's important because NetWare LANs run Novell's IPX protocol but need Internet Protocol to use the 'net. Before Cisco began to offer the new gateway packages, network managers had to buy IP software for each desktop device.

The gateways use only one IP address for each NetWare LAN, which is a key feature because IP addresses are becoming scarce.

## 'net gateways

Cisco will offer three Internet gateways in June. The IPEXchange

1003 and 1004 each have an Ethernet port and an Integrated Services Digital Network Basic Rate Interface port. The 1005 model has a port for a private line or frame-relay link.

The three gateways come with Cisco's new ClickStart software, which was designed to simplify installation of the gateways.

A 20-user license for the 1003 or the 1005 will cost \$2,495, and a 50-user license will cost \$3,750. A 20-user license for the 1004 will cost \$2,695, and a 50-user license will cost \$3,950.

## High-end switches

CONTINUED FROM PAGE 69

vanced features and products that aren't available yet.

For switching, Plaintree offers 10/100M bit/sec. Fast Ethernet switches, which are becoming popular, and Fiber Distributed Data Interface (FDDI) switching, which lets users boost FDDI backbone network performance.

The new Plaintree switches sport the following features and capabilities:

• **Spanning tree.** In a network

that has multiple routes between two points, spanning tree boosts network performance by choosing the most efficient route available. If that path fails, spanning tree automatically reconfigures the network to create a second path.

• **Virtual LANs.** Hindin gave Plaintree high grades for virtual LAN support. The vendor's products support port-, address- and protocol-based virtual LANs.

• **FDDI switching.** Many large users who have installed FDDI

backbones in their building or campus networks are running out of bandwidth. Plaintree is among the first vendors to offer affordable FDDI switching wares (see chart, page 69).

• **Rmon technology** gives users the tools to closely and continually monitor the performance of each port of their switch.

• **High-speed uplinks.** Every vendor promises them, but few have a variety of options. Plaintree, however, is prepping Fast Ethernet units and others.

The low-end and midrange Plaintree switches are shipping, and the high-end unit is due in June (see chart, page 69).

## Briefs

### FCC proposes spectrum set-aside

The Federal Communications Commission proposed setting aside a slice of radio spectrum for short-distance wireless networks. The spectrum, which would be available for free and without a license, could be used by schools that can't afford wiring and telephone hookups. It might also be used by companies to establish very flexible, ad hoc LANs that connect mobile PCs at distances of a few hundred yards. Apple Computer, Inc. has pushed the proposal for several years.

### Making E-mail safe

At the Electronic Messaging

Association show, a group of 10 vendors, including RSA Data Security, Inc. and Northern Telecom, announced support for the Security/Multiple Internet Mail Extensions (S/MIME) standard for Internet electronic-mail encryption. Some see this as a way to supplant X.400 because S/MIME will improve security for Simple Mail Transfer Protocol mailers.

### Geotek adds Boston

Geotek Communications, Inc., a wireless network provider in Montvale, N.J., expanded its wireless data network holdings into Boston. Like Geotek's other networks in New York, Philadelphia, Baltimore and Washington, the Boston mobile communications network pro-

vides integrated voice and data communications. Geotek expects to offer commercial network service in Miami, Dallas and Tampa/Orlando in Florida later this year.

### Telecom group puts on squeeze in France

Several telecommunications companies have formed a pressure group to defend their interests as the French government plans to liberalize the telecom market. AOST (Association of Telecommunication Operators), which includes AT&T France, BT France, and Cable & Wireless France, is particularly concerned with regulatory issues in France. Its members question how the Ministry of Telecommunications, designated to oversee regulatory issues, can remain objective when it's a principal shareholder in France Telecom.



# CONGRATULATIONS TO CISCO SYSTEMS, INC. AND STRATACOM, INC. FROM YOUR COMPETITOR, ASCOM TIMEPLEX, INC.

## ascom Timeplex

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We confess, however, the agreement to acquire StrataCom, Inc. for approximately \$4 billion in a stock transaction raised an eyebrow or two here at Ascom Timeplex. Have you heard about the company that TODAY can integrate:

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- IBM SNA networking
- Bisync
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on ONE SINGLE PLATFORM? That company is Ascom Timeplex and the product is the SYNCHRONY™ ST-1000.

For over 25 years Ascom Timeplex has been quietly meeting the enterprise networking needs of its customers, providing innovative solutions well before they became "fashionable" in the industry. In the early days of multiplexers, we were pioneers in the integration of voice and data (long before anyone believed that voice would come off the public network). Our "routers" have ALWAYS been frame relay switches, (long before connection oriented, virtual circuit-based architectures became the trend) and quality of service across multiple services is the foundation of our product architecture, (long before ATM quality of service became fashionable).

We are a recognized leader in enterprise networking systems, providing business-critical solutions to demanding Fortune 500 customers for the past twenty-five years. Our products range from the SYNCHRONY family of hybrid circuit, frame relay and cell switches and its well-established LINK/2+® family of T1/E1 multiplexers to comprehensive customer support services including design, hot-staging, installation and maintenance. Our key patented EXPRESS SWITCHING technology provides dynamic bandwidth allocation, end-to-end prioritization and quality of service guarantees for different types of traffic, such as voice, video, LAN and SNA, running over one large distributed network.


Sincerely,

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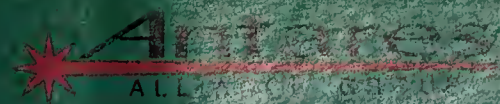
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# The Enterprise Network



## New Products

**Cylink Corp.** has introduced SecureFrame, a high-speed data encryption and security system for frame-relay-based wide-area network environments.

According to the Sunnyvale, Calif., company, SecureFrame works in conjunction with any public or private frame-relay

network, dynamically encrypting data while authenticating its source and destination.

SecureFrame was designed to deliver throughput of up to 2.045M bit/sec. and let networks run at full speed without performance slowdowns caused by the encryption and authentication process.

SecureFrame costs \$5,995.

► **Cylink**  
(408) 735-5800

**Stampede Technologies, Inc.** has announced OverDrive, a remote node accelerator.

According to the Dayton, Ohio, company, OverDrive lets users in the field connect to a corporate LAN with less access time. It is a client/server utility designed to increase performance of file/system applications over a remote node connection by reducing traffic and increasing bandwidth on the remote access link.

OverDrive caches data locally and verifies the integrity of the cached data when it is accessed. It was designed to eliminate redundant file reads across the remote link, which minimizes traffic and maximizes throughput.

It has two components: OverDrive Client and OverDrive Server Verifier. The Server Verifier runs as a Novell, Inc. NetWare Loadable Module on a file server or as a process on a Microsoft Corp. Windows NT Server.

Pricing for OverDrive Client starts at \$119. The OverDrive Server starts at \$295.

► **Stampede Technologies**  
(513) 291-5035

**GTE Corp.** has introduced InfoGuard 100.

According to the Stamford, Conn., company, InfoGuard 100 is an Asynchronous Transfer Mode (ATM) cell encryptor that provides end-to-end protection of sensitive data through a public or private ATM network. It features a public key-based encryption process.

Pricing for InfoGuard 100 starts at \$49,950.

► **GTE**  
(203) 965-2000

**Tektronix, Inc.** has introduced XpressWare 8.1, network communications software.

According to officials at the Beaverton, Ore., company, XpressWare 8.1 lets Tektronix TekXpress Netstations provide access to data — including audio and video — from any host on a corporate network or the Internet. It includes distributed video playback and remote administration features.

XpressWare 8.1 lets users fast forward, rewind and replay specific sequences while viewing on-demand video clips. When booting up, XpressWare compares the version number of its internal boot-ROM with that of the bootROM on the host computer and automatically downloads the newer version.

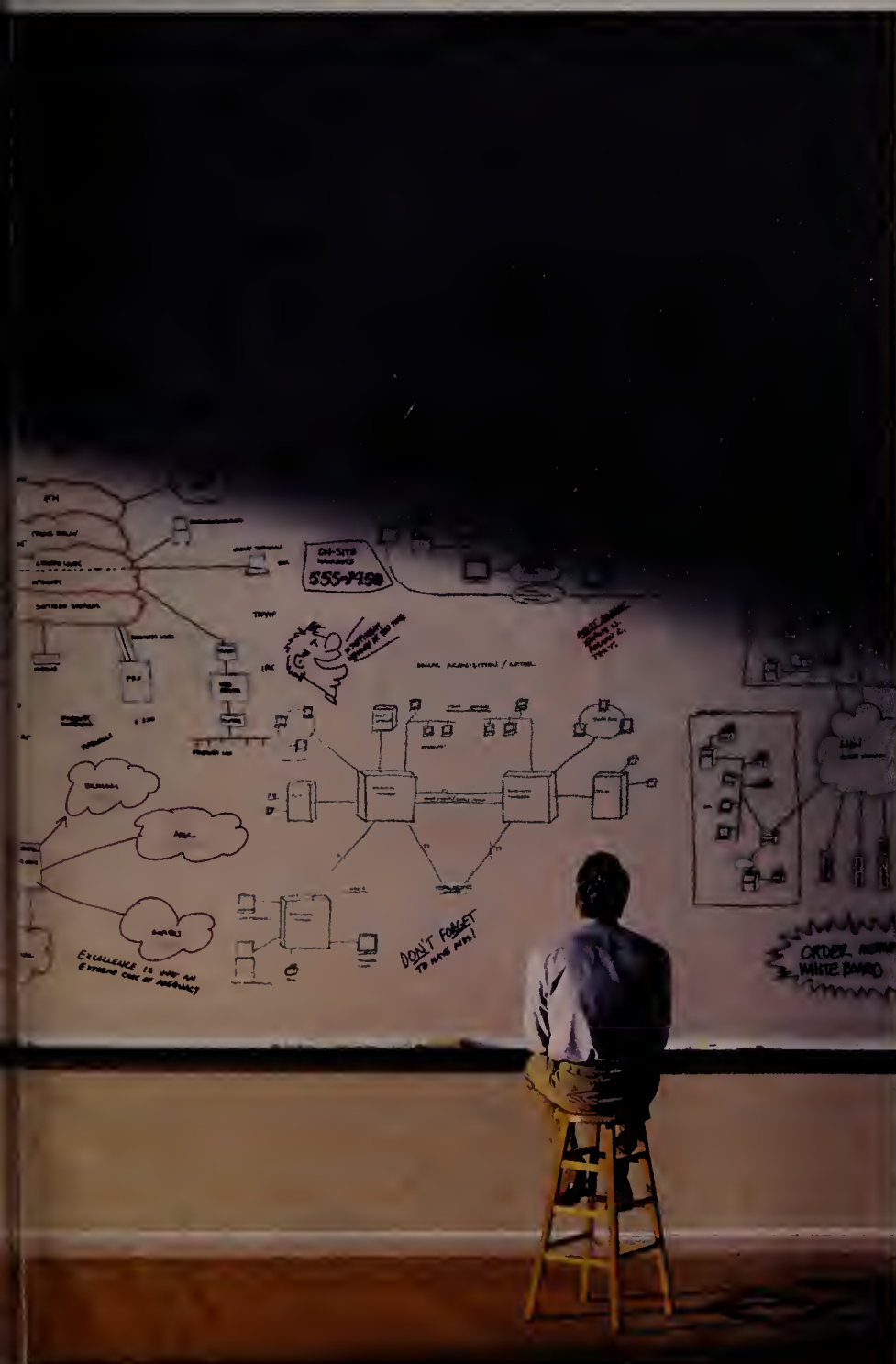
Pricing for XpressWare 8.1 starts at \$850 per site.

► **Tektronix**  
(503) 627-7111

## Product short

**Power Center Software LLC** has announced The Power Center Suite for Windows NT, enterprise management software designed to detect and correct problems with systems, networks, peripherals and applications. Pricing starts at \$495 per node. Power Center, Englewood, Colo. (303) 220-1500.

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Faster alternatives to  
groupware take off, 81

# The Internet

## WebTrak Internet Marketing Module does the following:

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- 2 Lets salespeople download software and send documents over the 'net
- 3 Lets companies link their home pages to Aurum's sales and marketing software for lead generation

## Sales software firms go to Web

By Mindy Blodgett

Though it is primarily an advertising vehicle, the Internet has the potential to be a highly effective marketing and sales tool, industry observers said.

And sales force automation, customer support and contact management software vendors are heading in increasing numbers to the Internet to give users a competitive edge.

"The hottest trend right now in sales automation and customer support software is Web-based products," said Judith Hodges, an analyst at International Data Corp. in Framingham, Mass. "Everyone is working on advancing their Web strategies."

Although many products are being planned, products that truly help the sales process via the World Wide Web are still hard to come by, analysts said.

Some users say they are intrigued by use of the Web for sales or customer support, but they aren't sure if they need them. Cy Hoormann, manager of services at Entergy Corp., an electrical utility in New Orleans, said though his company is building an intranet, "we are just in the beginning stages of thinking about uses for the Web."

"I can imagine the Web would be useful in allowing end users direct access to the utility," Hoormann said.

Ken Dulaney, an analyst at Gartner Group, Inc. in San Jose, Calif., said one of the features needed in sales force automation software is a standard way to format functions such as document storage.

"Some of the vendors have released proprietary formats," he said. But they should standardize on Hypertext Markup Language, the standard for defining links between documents, he said.

Another issue sales force automation software companies face is security over the Internet, Dulaney said.

One Web-based product on the market is VanWeb from Vantive Corp. in Santa Clara, Calif. The software features hypertext linking to provide universal access and embedded links to other pages, as well as

Tools, page 81

## Agencies sell seats online

# That's the ticket!

By Mitch Wagner

**T**icketmaster Corp., the largest ticket-selling agency in the U.S., plans this week to launch nationwide trials of selling over the Internet.

Ticketmaster, at <http://www.ticketmaster.com>, isn't the only company that sells tickets online to real-world events. *Playbill* magazine, at <http://www.playbill.com>, and The Shubert Organization, Inc., both in New York, have linked up to launch a pilot program to sell tickets to Broadway plays on the Internet. They plan to open the program to the general 'net public later this month. Meanwhile, MovieFone, Inc. in New York, whose site is at <http://www.moviefone.com>, has been offering tickets online to movie theaters nationwide since July.

"We feel like the Internet is where commerce is going," said Bob Perkins, vice president of online services at Ticketmaster in Los Angeles.

Ticketmaster will begin offering ticket sales for the Lollapalooza '96 tour, a multicity road show of alternative rock bands, on its World Wide Web page this week. By the end of June, the \$1.6 billion company plans to offer tickets online for all its events.

### The natural thing to do

Selling tickets to events is a natural business to go online. The electronic mechanism for taking orders is already in place — the mainstay business of all three companies is selling tickets over the telephone. In all three cases, the problem was connecting the ticket sales systems to the Internet.

This required a partnership between information systems and an external organization familiar with Internet marketing. IS people built the links to the internal systems, while the outside groups built the Web pages. This gave IS additional staffing, but more importantly, IS got the ability to put Web pages up fast while learning how to use the Internet.

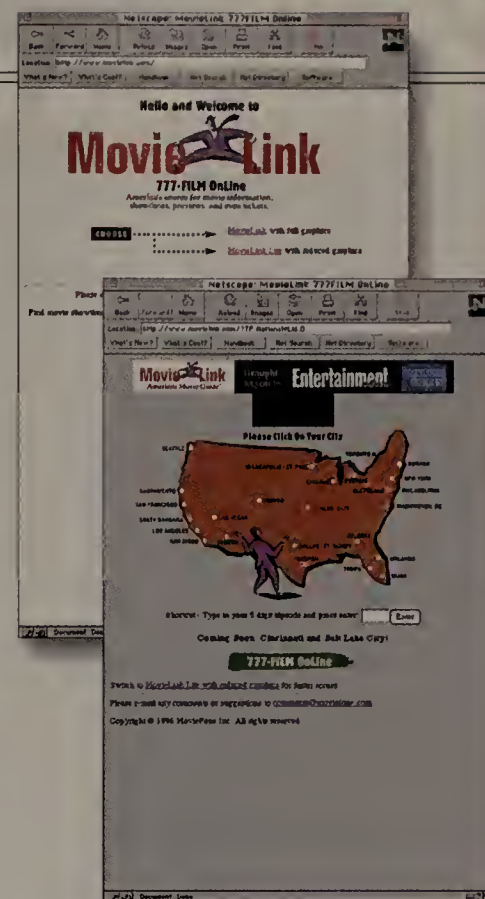
"We do everything in-house now. But at the start, we had never built a Web site before, and we needed horsepower for the development," said Matt Blumberg, MovieLink product manager at MovieFone. MovieFone turned to the Arts Technology Group, an Internet consultancy in Boston.

Ticketmaster used Starwave Corp. in Seattle. Starwave puts out the popular ESPN, Inc. and Mr. Showbiz sites, among others. Both Starwave and Ticketmaster are owned by Microsoft Corp. co-founder Paul Allen.

Meanwhile, *Playbill* and Shubert called on the Symphony Group to help design their site.

A key component to selling tickets online is connecting to the database of information about tickets, pricing and availability. The experiences for *Playbill*, Ticketmaster and MovieFone have been very different.

The *Playbill* site needed to connect to Shubert's Telecharge.com. Ticket, page 81



MovieFone has been selling tickets online to theaters nationwide since last July



Ticketmaster plans to offer online ticket sales for all its events by June



Playbill and Shubert have joined up to sell theatre tickets online



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# Groupware alternatives take off

By Kim S. Nash

Groupware is overkill. Or so say several vendors that last week released Web-based packages that they say are slimmer, faster and cheaper alternatives to Notes and other groupware programs.

The argument is that much of what people use systems such as Notes for — orderly, documented conversation and document sharing — is more easily done with software designed specifically for those purposes.

Net.Genesis Corp. and West Coast start-up WebFlow Corp. announced packages that are based on World Wide Web standards and designed to let users work on documents at the same time and/or conduct threaded, archived discussions online.

Another new company, Arachnid Software, Inc., demonstrated a similar product at last week's Internet World show in San Jose, Calif. Also at the show, Radnet, Inc. showed its \$1,495 WebShare package; the 1-year-old Cambridge, Mass.-based firm plans to ship WebShare by the end of next month. A development kit to build intranet applications for WebShare costs \$695 per developer.

## Discussion groups

This discussion group twist on the Web vs. groupware debate has grabbed user attention.

"If we can do this more cheaply than Lotus Notes and more easily than actually building [similar software] ourselves, it makes a lot of sense to me," said Erik Monsen, chief information officer at Mainstream Online, a job placement company in Stamford, Conn.

On the other hand, Notes packs punches that some discussion group products don't — database support and application development tools, for example.

Mainstream Online evaluated Lotus Development Corp.'s Notes early this year as a way to add discussion groups to its career advice Web site, but it balked at the expense and maintenance complexity.

"It's like driving a 10-penny nail with a sledgehammer," Monsen said.

Better, he said, was NetThread, a discussion group product from Net.Genesis in Cambridge, Mass. NetThread is a server application that lets Web site visitors conduct threaded Usenet-style discussions by posting comments to one another's messages. The product was less than half the cost of in-

### Share and share unalike

While Netscape plans to use Net News Transport Protocol to underpin its forthcoming groupware products, other vendors say using Web standards such as HTTP and HTML is more powerful

**HYPERTEXT TRANSPORT PROTOCOL (HTTP):**

Format for moving documents around the Web.

**HYPERTEXT MARKUP LANGUAGE (HTML):**

Language for tagging parts of Web documents to display information in different ways, such as bold, italic, large or small text. It also allows for hot links, which are pictures or words that, when clicked, usher users to other Web pages.

**NET NEWS TRANSPORT PROTOCOL (NNTP):**

Format for moving posts around Internet newsgroups such as Usenet.

**WebFlow's Same Page work-sharing product uses HTTP and HTML to let online users see and annotate documents at the same time**

stalling Notes, he said, and simpler to administer.

Net.Genesis unveiled NetThread 2.0, an upgrade aimed at intranet applications. For example, it lets webmasters from different departments maintain different discussion forums, but it also lets an administrator monitor those areas from a single point. Links to databases are done through Open Database Connectivity gateways.

NetThread 2.0 isn't yet priced. But when it ships in June, its pre-

decessor, originally priced at \$895, will be available for free on Windows NT.

WebFlow, meanwhile, is a new company in Santa Clara, Calif. Its Same Page Web package was designed to track and organize tasks for project teams online. The product costs \$3,500 for 10 users.

This steady stream of work-group products that pinpoint specific tasks reflects a bigger trend in Web software, said Suri Duddella, Internet manager at Well-

spring Resources, a Washington-based technology consulting firm for financial companies.

Many new products aren't big packages akin to, say, client/server applications, Duddella explained. Rather, they are smaller modules that can be snapped into existing systems or strung together to form customized applications, he said.

"It seems like people on the Web don't want to be bothered by a lot of extra stuff on their hard drives anymore," he said.

## Popularity contest

WEB SERVER	Number of sites running server		
	AUGUST 1995	DECEMBER 1995	MAY 1996
Freeware Apache*	658	10,813	58,575
University of Illinois' freeware NCSA	10,835	22,770	48,198
Netscape (all versions)	767	8,576	30,585
World Wide Web Consortium's freeware CERN	3,733	7,533	15,022
Microsoft IIS	0	0	4,923
O'Reilly WebSite	173	2,045	8,631
Process Purveyor	72	480	2,687

\*Includes original server only, not subsequent versions based on the freeware server built by other users

Base: Aug. 1995 (18,957); Dec. 1995 (60,374); May 1996 (193,150)

Source: Netcraft Ltd., Bath, England

Netcraft Ltd., a Web consulting firm in Bath, England, started to track World Wide Web server usage last August by randomly "pinging" known Web sites. Netcraft sent an electronic message that asked the site, "What Web server are you running?" Almost 19,000 sites were polled in this automated way; more than 150,000 sites were pinged for last month's results.

The survey is published monthly at <http://www.netcraft.co.uk/>. It doesn't monitor Web server use in intranet applications because these sites are protected by firewalls and therefore can't be pinged.

## Ticket

CONTINUED FROM PAGE 77

puters, which oversee phone ticket sales for 20 theaters in New York, Boston and Washington. Those systems run a proprietary online transaction processing system on Control Data Systems, Inc. mainframes.

Shubert is moving to Digital Equipment Corp. Alpha servers with an Informix Corp. database. In the interim, to preclude having to do the work twice, Shubert offi-

cials opted for an approach that David Andrews, director of operations, acknowledged is something of an embarrassing kludge: An operator watches the *Playbill* site using a PC running Netscape Communications Corp.'s Navigator and types orders into a terminal that feeds the Control Data mainframe.

Ticketmaster is running a two-stage trial. Consumers will type Lollapalooza ticket orders into a form on the Web running on a Commerce Server from Netscape. Orders will be stored in a Microsoft SQL Server database

and then transferred either via diskette or file transfers over the Internet to the Ticketmaster ticket system. By late June, the company will deploy software on the Commerce Server that emulates the front end of the telephone order-entry system.

The MovieFone system is more straightforward. Both the telephone order-entry system and the Web server run on PCs with the Berkeley Software Design, Inc. operating system. Connecting the transaction systems was a simple matter of sharing data between similar databases.

## Tools

CONTINUED FROM PAGE 77

relational database navigation. Users can create and upgrade data via the Web and make inquiries on VanWeb, which costs \$25,000 per suite. That price includes a server.

William Levesque, vice president of customer services at Aim-Tech Corp. in Nashua, N.H., uses

VanWeb for customer support, to provide answers for frequently asked questions on products and to allow customers to request samples of products.

"By using the product, we have been able to decrease customer calls," Levesque said. "By using the Web, customers have been able to resolve 20% of the problems themselves. We have also been able to give quicker response and callback times to our customers."

Aurum Software, Inc., a leading sales force automation provider in Santa Clara, Calif., also has a product on the market. Called WebTrak, it costs about \$10,000 and runs on any Unix Web server. WebTrak integrates with Web software from Netscape Communications Corp. and Oracle Corp. and with Aurum's SalesTrak and TeleTrak software.

WebTrak gives firms the ability to integrate their sales and marketing applications over the 'net



## New Products

Fulcrum Technologies, Inc. has introduced Surfboard 2.0, information retrieval software for Internet and intranet servers.

According to the Ottawa company, Surfboard 2.0 has a distributed search architecture that allows indexes to be stored on local servers. It supports saved, reusable

queries that can be created by individual users for personal use or by administrators for public use.

Surfboard 2.0 has configurable Hypertext Markup Language (HTML)-based templates for results lists. It supports HTML and Adobe Systems, Inc.'s Portable Document Format. It also translates documents to HTML so any indexed document can be viewed by common World Wide Web-based clients or browsers.

Pricing for Surfboard 2.0 starts at \$6,250 per server. More information is available at Fulcrum's home page at <http://www.fulcrum.com>.

► **Fulcrum Technologies**  
(613) 238-1761

O'Reilly & Associates, Inc. has unveiled WebBoard, a multithreaded conferencing system.

According to the Sebastopol, Calif., com-

pany, WebBoard lets webmasters add on-line conferencing to any Windows World Wide Web server that fully supports the Windows Common Gateway Interface. It includes activity logs, user profiles, remote administration capabilities and private responses through electronic mail.

WebBoard features virtual boards that let a single site house up to 255 individual boards with an unlimited number of conferences.

WebBoard costs \$249. More information is available at O'Reilly & Associates' home page at <http://software.ora.com>.

► **O'Reilly & Associates**  
(707) 829-0515

Macromedia, Inc. has introduced Authorware 3.5, multimedia and World Wide Web publishing software for cross-platform interactive uses such as training and courseware information, digital publications and online documents.

The San Francisco company said Authorware 3.5 is multimedia authoring software that was designed to let users survey customers online and send their responses to a server database automatically. It works on Microsoft Corp.'s Windows 95, Windows NT, Windows 3.1 and Apple Computer, Inc.'s Power Macintosh and Macintosh.

The latest version of Authorware includes Shockwave — a tool that compresses and streams sound, graphics and animation — for delivering data-intensive applications over intranets.

Pricing starts at \$4,995.

► **Macromedia**  
(415) 252-2000

IQ Software Corp. has announced IQ/LiveWeb, which provides on-demand access, analysis, reporting and publishing of information from corporate databases on World Wide Web servers.

According to the Norcross, Ga., company, IQ/LiveWeb lets corporations use the Internet infrastructure for information access and dissemination via standard Internet browsers.

IQ/LiveWeb includes features for scheduling and executing queries and reports on the server, and report creation. It also includes hyperlinking and navigation tools.

Pricing for IQ/LiveWeb starts at \$3,995.

► **IQ Software**  
(404) 446-8880

Abraxas Software, Inc. has introduced PCYACC/Web 1.0 a World Wide Web language tool kit.

According to the Portland, Ore., company, PCYACC/Web 1.0 helps users develop Web language scripting products. It supports Sun Microsystems, Inc. Java, Microsoft Corp.'s Visual Basic, Hypertext Markup Language, Standard Generalized Markup Language and Virtual Reality Modeling Language.

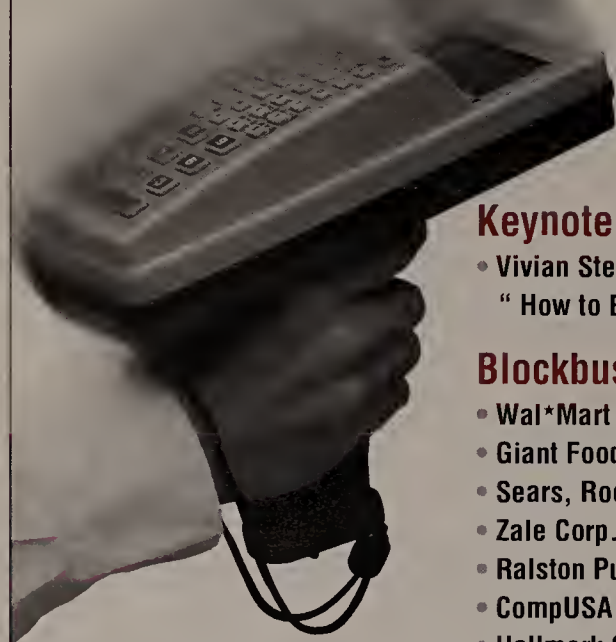
Pricing for PCYACC/Web 1.0 starts at \$495.

► **Abraxas Software**  
(503) 244-5253

# Retail Systems 96

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- CompUSA on World Wide Web
- Hallmark Cards on Store-level Decision-making
- Lowe's on Distribution Infrastructure
- The Gap on Retooling for Client/Server

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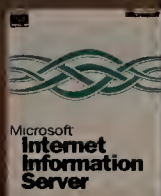


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If you build a field of dreams,  
will they come?

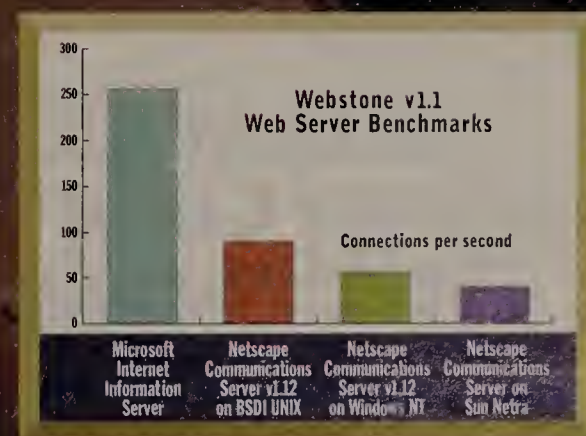
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And in just six weeks' time, more than 2,300 companies deployed Web sites powered by Internet Information Server.\*) Why the stampede? Grab a pencil. According to



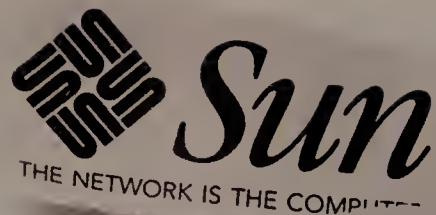
*Windows Magazine*, Internet Information Server is "blindingly fast." In fact, it's four times faster than all other Windows NT™-based Web servers,\*\* and executes Web applications up to five times faster than all other servers. So it's your best choice for publishing information on the Internet and intranet. And because it's fully integrated with Windows NT Server directory services, it easily fits into your existing internal network. What's more, as an integral part of BackOffice™, Internet Information Server brings even more power to your intranet. Oh, and it's free. Download today by visiting <http://www.microsoft.com/infoserv/>. Or call (800) 426-9400, Dept. A242, for the name of a reseller near you†. You'll have the world of the Web at your door in no time.

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Network upgrade to give MasterCard transactions a charge, 86

# Corporate Strategies

Corporate Strategies

As Lockheed Martin slashes help desk personnel, it must ask:

By Thomas Hoffman

**L**ockheed Martin Enterprise Information Systems is trying to keep its 150,000 end users from going ballistic.

About help desk support, that is.

The Orlando, Fla.-based information systems unit of Lockheed Martin Corp. will consolidate 13 help desks across the U.S. on a common client/server platform. Called the Multiplatform Action Response System (MARS) and expected to be completed in mid-July, the new setup is anticipated to save the firm \$7 million over five years.

Those savings will come from reducing help desk staff from 70 to 40, lowering real estate expenses and eliminating support of multiple help desk systems.

Despite the staff reductions, the system should enable Lockheed Martin to more proactively fix systems problems that affect large groups of users. About 1,100 calls for help stream in each day from the company's 40 U.S. offices.

The MARS help desk will be located in the company's Denver and Orlando offices.

## In comparison

To ensure that its help desk would rank among the industry's best, Lockheed Martin measured its operations against those of 100 other help desks with the aid of the Help Desk Institute in Colorado Springs and Verity Consulting in Los Angeles, said Donna Mercer, who manages client support and led the MARS project.



## Will customers go BALLISTIC?

Lockheed Martin uses Remedy Corp.'s help desk package, which runs on two Hewlett-Packard Co. HP 9000 K100 servers. The TCP/IP, Ethernet LAN-based system replaces a variety of homegrown packages that ran on IBM PCs, Macintoshes, Sun Microsystems, Inc. Unix boxes and other workstations. Help desk workstations include Sun and HP Unix

machines, IBM PCs and Macintoshes.

Help desk and network management integration are prime areas where merging defense firms — in this case, Lockheed Corp. and Martin Marietta Corp. — can achieve big cost savings, said Paul A. Strassmann, former chief information officer at the Department of Defense.

Companies can lower their per-seat help desk costs if they recentralize and “do it from a sophisticated central site,” said Strassmann, who now teaches information warfare at the U.S. Military Academy in West Point, N.Y.

## Realignment

The company spent less than \$1 million to fund the 12-person planning group and 40 new multiplatform workstations needed for the new help desk environment, said Paul Pelotte, vice president of distributed computing and telecommunications at the IS unit in Valley Forge, Pa.

“The target is to get the folks in Denver to handle as many of the [help desk] calls as possible,” he explained. “It’s 30% cheaper to resolve a system problem over the phone than it is to dispatch a technician to fix it.”

The IS group is also taking advantage of the company's intranet to post information about technology upgrades or glitches that affect hundreds of users.

The company will add other help desk functions this summer, such as automated callbacks on problem fixes via telephony, electronic mail or its intranet home pages.

## Best Western checks in with client/server

By Jaikumar Vijayan

In a \$15 million systems-modernization project, Best Western International is implementing a worldwide reservation system based on a two-tier client/server architecture.

The move is expected to generate an estimated \$44 million in incremental annual room revenue and reduced operating costs — such as training — for the group's member hotels worldwide.

The effort puts the group's reservation system on a par with others in the industry but doesn't give Best Western an edge over them, observers said.

“All this is commendable, but it doesn't give them any particular edge in the market right now,” said Robert Langsfeld, principal associate at Langfeld Fazio & Associates, a travel management consultancy in Incline Village, Nev.

“It is like, ‘Congratulations on a job well done, but what's next?’” he said.

Best Western, based in Phoenix, has more than 3,500 independently owned and operated member hotels in 62 countries. Under the two-phase project, Best Western has just deployed a communications network called Lynx at its central reservations offices in Wichita, Kan.; Phoenix; Milan, Italy; and Dublin.

Best Western properties in North America are connected to the reservation offices via two-way satellite communications from Hughes Network Systems, Inc. Internationally, properties are connected via a combination of AT&T Corp.'s frame-relay and virtual private network services.

Starting later this quarter, new Windows 95 PCs will be deployed at each of the member hotels. They will tie into the central system in Phoenix. All of the new components will be installed by this fall.

“What we are doing is playing catch-up with the competition,” said Mary Swenson, vice president of worldwide reservations and sales. “For us, it was more of a competitive necessity than an option.”

Best Western had been using the same mainframe platform for close to 18 years with few enhancements along the way.

“It was a good pony. . . . It served its purpose, but it needed to be replaced,” Swenson said.

Baseline features of the new system include detailed guest histories, online packages and group booking capabilities.

Enhanced features include interactive maps to assist reservation agents in property location and selection. And to monitor employee productivity, the system features performance track-

ing modules and revenue-management tools. The system also features a new graphical user interface.

“It could ease the jobs of our reservation agents tremendously,” said Don Seton, chairman of Sea Wake Resorts, Best Western, page 86

## Available room

Best Western's new system is powered by two Unix-based Digital Equipment Corp. AlphaServer 8400 enterprise servers on an Oracle7 platform. When fully implemented, the system will hold close to 1T byte of data, support 4G bytes of memory and process 1.5 million “room-nights” and 15 million calls annually

**Mary Swenson,**  
VP of worldwide  
reservations  
and sales





# New menu at Pepsico

## Fast-food division orders TM/1 tool

By Jacqueline Mailloux

Those who analyze data to plot the future of Pepsico Restaurants International have a lot on their plate. But at least the data is more accessible these days.

A reorganization last year brought fast-food restaurants Pizza Hut, Kentucky Fried Chicken and Taco Bell together in a single division and swelled the amount of financial data to be handled. The company has more than 3,000 stores in 29 countries from Hawaii to Morocco and handles 20 currencies.

"Suddenly, we came to an issue of how to handle a [huge] database which was not consistent in different markets and not consistent between Kentucky Fried Chicken and Pizza Hut," said Ernest Luk, Asia region planning manager for Pepsico Restaurants. And so the company began evaluating two online analytical processing tools — Sinper Corp.'s TM/1 and Hyperion Software Corp.'s Hyperion.

"What we need is a central database to put together all the information that we gather from the different markets," Luk said. Specifically, Pepsico planners wanted to be able to drill down into financial data, consolidate different divisions' results, compare actual

results to the forecasts and translate foreign currencies to U.S. dollars.

Although Pepsico Restaurants' U.S. headquarters uses Hyperion, the Asian headquarters decided to go with TM/1. Besides meeting business requirements, Luk said, TM/1 was selected because it was easier to get it up and running than Hyperion.

And Luk, as a finance professional and a self-proclaimed "noncomputer guy," is pleased with TM/1's ease of use. "[You] just drill into the database and look at the numbers and try to make sense of it," he said.

Seven LAN workstations run TM/1 Version 2.0, including one at a remote location. TM/1 Spreadsheet Connector on the LAN allows users to share data.

### Bugs in the system

To manipulate the TM/1 database, Luk uses Lotus Development Corp.'s 1-2-3 spreadsheet. But after using the LAN version of TM/1 with Lotus for about 10 months, he and his team have found some bugs.

For example, Luk said, there are difficulties when changing data using the cut-and-paste functions. "I would rather take my server down and then use the stand-alone version, do all the cut-and-paste, save the database and then put the server back up," he said. "I don't think I should do that, but because of the bugs, we have to live with that for now."

He noted that some of the problems are unique to running TM/1 with Lotus. When TM/1 was tested with Microsoft Corp.'s Excel, there were fewer difficulties, he said.

Mailloux writes for *Computerworld Hong Kong*, from which this is excerpted.

**WAREHOUSE**  
**data**

**"Suddenly, we came to an issue of how to handle a [huge] database which was not consistent in different markets and not consistent between Kentucky Fried Chicken and Pizza Hut."**

— Ernest Luk,  
Pepsico Restaurants

# MasterCard upgrade gives network a charge

By Kim Girard

During the holiday season, MasterCard International, Inc.'s global network bursts with credit- and debit-card traffic. On just one December day last year, 16 million financial transactions chugged along the corporate electronic network, compared with about 10.5 million on an average day.

Because of the constraints of an aging network, MasterCard pays year-round for the bandwidth capacity needed to pull the company through the peak season.

But that's about to change.

Soon, with the boost of a transaction processing network upgrade provided by AT&T Solutions, MasterCard will have access to bandwidth on demand, global frame-relay services where available and, down the line, Asynchronous Transfer Mode (ATM).

These services will come thanks to a new 10-year, multi-million-dollar contract with AT&T Solutions, which will design, build and help manage the private virtual network for MasterCard. Work should be completed by the first quarter of 1998.

AT&T provides leased lines to MasterCard now, but MasterCard built the original network itself, using many different companies for hardware and software. MasterCard's network sprawls across 30 countries. It settles \$500 million per day in credit- and debit-card transactions and supports

22,000 financial institutions.

The current X.25 network, built in 1983, runs smoothly but is antiquated and slow, according to Arthur Ahrens, senior vice president of operations and systems development at MasterCard in Purchase, N.Y.

"Fifty-six kilobits is pretty darn slow — even though we have T1," he said. "It gets expensive. It gets unwieldy when you're running a network this big."

Analyst Allie Young at Dataquest in Westboro, Mass., said AT&T is a per-

fect strategic partner for MasterCard.

"There can be a real synergy there to drive new business opportunities," particularly in the field of electronic commerce, Young said.

MasterCard began looking at overhauling its aging network two years ago, hiring several consulting firms to pick a suitable partner. It was looking for speedier data transfer, greater access to evolving services and technologies, global service options and an end-to-end management contract.

MasterCard's X.25 network now uses packet switching processors at 16 locations. From those locations, MasterCard con-

nects to 1,500 member banks. Through the upgrade, MasterCard expects to save money and get a competitive edge with the

upgraded services it will be able to provide its members.

"We cannot use frame relay, and it's not possible to support ATM," Ahrens said. "Those are the big ones because if you can't use those services, you over-build the network or limit yourself competitively."

The upgrade will give MasterCard a router-based network that provides

TCP/IP to move data around rather than the proprietary protocols of the existing network.

AT&T was a logical business choice for many reasons, Ahrens said. MasterCard started working with AT&T in 1984 when the credit-card giant began building a network. Seven of MasterCard's nine packet switching centers are housed in AT&T facilities.

Andrew Mayer, a senior manager at Ernst & Young, a financial consulting firm, said the contract could help keep MasterCard on top. "The other two [Visa and American Express] are both well-positioned within the marketplace, but this is very powerful," he said. "This could move MasterCard ahead."



**MasterCard's Arthur Ahrens says the company's current network is slow, expensive and unwieldy**

## Briefs

### Infonet Services manages Exchange

Infonet Services Corp. in June will offer the Notice Server service, which manages a company's Microsoft Corp. Exchange servers from Infonet's El Segundo, Calif., site. Geographically dispersed customers running Exchange don't have to assign one of their offices to route electronic-mail messages or distribute public folder information. Instead, users can choose a dedicated Exchange server for their business or share Exchange servers with trading partners. Pricing

will be announced in June.

### Health care support

Healthcare Partners Plans, a Tyler, Texas, health maintenance organization, has licensed Computer Sciences Corp.'s MHS Managed Health Information System. Healthcare Partners, a start-up that began operations May 1, will run the CSC system on an IBM AS/400 platform.

### Year 2000 services

Comdisco Disaster Recovery Services in Rosemont, Ill., has introduced Millennium Testing Services, under which compa-

nies can test their programs to determine the effect the year 2000 date change will have on their systems. The services support nearly a dozen platforms, including IBM and Unisys Corp. mainframes, Hewlett-Packard Co. HP 9000 systems and Digital Equipment Corp. VAX and Alpha systems.

### SHL, ABT in deal

SHL Systemhouse, Inc. has adopted ABT Corp.'s Repository technologies under an OEM pact. ABT Repository links multiple work teams and allows shared-project reporting across an organization.

## Best Western checks in

CONTINUED FROM PAGE 85

which owns three Best Western hotels in Clearwater, Fla.

For instance, once the system goes fully on-line, reservation agents will be able to instantly give customers detailed descriptions, including pictures, pricing and up-to-date availability, of Best Western properties anywhere in

the world. Because of this improvement, the system will allow Best Western property owners to better manage their room inventory, he said.

The availability of customer databases and online guest histories will also allow individual hotels to apply frequent-guest discounts and track customer preferences worldwide.





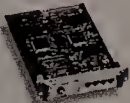
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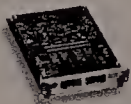
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switch or switch to server. Coming soon



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Router 210. Connectivity to remote site

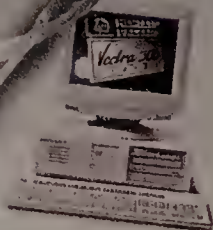


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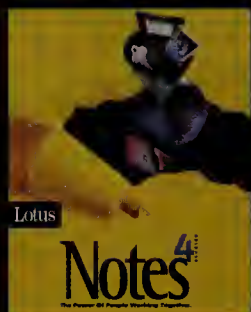
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# 'net, outsourcing drawing banks' interest

By Thomas Hoffman  
PALM SPRINGS, CALIF.

The banking industry is gingerly eyeing the Internet and IS outsourcing as ways to fight back against mutual fund companies and stock brokerages.

"The financial industry is in a lot of turmoil right now," said Abraham L. Nader, a senior vice president at Dollar Bank in Pittsburgh, who attended the IBM Banking, Finance & Securities Industry's 1996 Executive Institute here.

Dollar Bank, like many of its peers, is grappling with the question of selling banking products over the Internet. "We could have a site up in 30 days, but can we make any money off of this? I'm not convinced," said Nader, the bank's top strategist.

As recently as

1980, 70% of all U.S. assets were kept in banks, according to Rita Turner, director of marketing at Wilmington Trust Co. in Wilmington, Del. Today, banks hold less than 25% of those assets, she said.

To help retain its niche position in a state where many companies choose to incorporate, Wilmington Trust plans to offer fee-based Internet banking services to commercial customers, Turner said.

And more banks are opting to outsource non-core information systems activities. Washington Mutual Bank recently signed a 10-year \$533 million pact with IBM's Integrated Systems Solutions Corp. (ISSC) unit to manage its help desk, network and desk-top computing services.

The outsourcing deal "should help us move forward with technology and keep our [IS] staff current on new technologies," said Liane Wilson, executive vice president of corporate operations at the Seattle-based bank.

Wilson made sure that ISSC would hire the bank's IS staffers. "Our staff has a better opportunity with ISSC than they ever did with us. We're a bank, not a network management company," she said. She said she expects the bank to complete the outsourcing transition by year's end.

Bank of Boston recently rolled out an OS/2-based retail banking system to the first of its 300 branches. The move is part of a \$30 million systems integration deal with IBM that is expected to provide customer service representatives with better infor-

mation, said Stephen Starr, a project manager at the Boston-based bank.

Mercantile Bancorporation, Inc. in St. Louis has acquired more than 20 banks since 1990, helping it increase its profits from \$57 million to \$217 million last year,

said Ronald G. Schwartz, vice president of acquisitions/product management.

In 1994, during an acquisition lull, the bank halved its 24-person applications conversion staff. Soon after, Mercantile acquired three more banks.

Rather than ramp up its internal staff, Mercantile selected ISSC to handle the bank conversions. The move enabled Mercantile to make the conversions on time and for 25% less than if it did the work itself, Schwartz said.



**Liane Wilson, Washington Mutual Bank:** "Our staff has a better opportunity with ISSC than they ever did with us"

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SUMMER PROGRAMS  
for IS Managers, page 94  
IS Manager's Bookshelf, page 96

# Managing

Can techies learn the lingo of accounting and finance? You bet, when . . .

## You've got a friend

By Steve  
Alexander

Chief Information Officer at Dataserv, Inc. Byron Baker found himself in trouble last year because he didn't speak the language of finance. But he was able to pull himself out with a few simple words of English — he asked for help.

Not only did Baker face 1996 information systems expenditures that would be nearly twice those of last year's budget, but he also would have to stand up to his CEO's scrutiny by himself. In the past, Baker had reported to a chief financial officer, whose word on financial matters usually wasn't questioned. Without the CFO as a buffer, Baker would have to defend cost justifications, purchasing decisions and project tracking information on his own. But the technical and project management experience that had landed him his job hadn't prepared him to speak the financial language of the CEO.

### Common problem

Baker's dilemma isn't unusual among CIOs. It's often said that to be accepted as part of senior management, CIOs need to be fluent in accounting and finance. Few of them know the language, and it's killing them.

"One of the things that continues to plague the information technology industry is this barrier between the language that IT uses and the dollars and cents language the rest of the company uses. IT people get talked down to in companies because they lack the financial talk," says Ron Brzezinski, a former CIO who now runs Transformation Associates, an IS management consultancy in Chicago.

That was true for Baker. The 37-year-old has been at Dataserv nine years, first as an applications manager, then as IS director. He became CIO four years ago. The financial knowledge he has is what he has picked up accidentally along the

aren't that good with finance," he says.

Luckily for Baker, Gary Mainor, Dataserv's president and CEO, understood the problem. "I don't think you find many MIS people that necessarily come in trained with budget and fiduciary skills," Mainor says.

Mainor saw that his CIO was in an impossible situation, caught between the CEO and the business unit managers. On

ported to the CEO for several months that Baker realized he had to ask for help.

For seven years, Dataserv had pioneered the idea of "financial business partners" — finance department managers who are placed in other divisions to help managers improve their financial oversight and reporting skills. In most cases, the financial partners are ranked lower than the business executives they advise.

In the process, he could improve his credibility by overcoming the perception that IS managers aren't business literate.

There was no downside in asking for help: In Dataserv's team-oriented corporate culture, managers gain points for teaming up with others if it will make their own group more effective.

Mainor approved. He thought it would help him learn what he was getting for

*"IT people get talked down to in companies because they lack the financial talk."*

way. (Dataserv is an outsourcing services firm in Minneapolis that has been owned by BellSouth Corp. since 1987. It has 1,350 employees. Wang Laboratories, Inc. on April 10 announced it would acquire Dataserv.)

Baker began to report to the CEO in late 1994 when a systems conversion and the installation of several new systems caused a big jump in IS spending.

The new arrangement forced him to deal with "the perception that IT guys

the one hand, Mainor needed specific return on investment (ROI) information about IT spending. On the other hand, the managers needed to justify — sometimes hastily — IT investments so they could pursue their business plans. Baker was the middleman, often forced to accept business unit ROI projections on faith, then having to take the heat when those ROI results didn't materialize.

"That's a no-win situation for an IT guy," Baker says. It was after he had re-

Michael Woodard, treasurer at Dataserv, says because of the partners, business unit executives have learned to ask tough questions about gross margins and projected revenue growth.

"Five years ago, they didn't ask financial questions like that. They just looked at how to provide service, not how to provide service profitably," Woodard says.

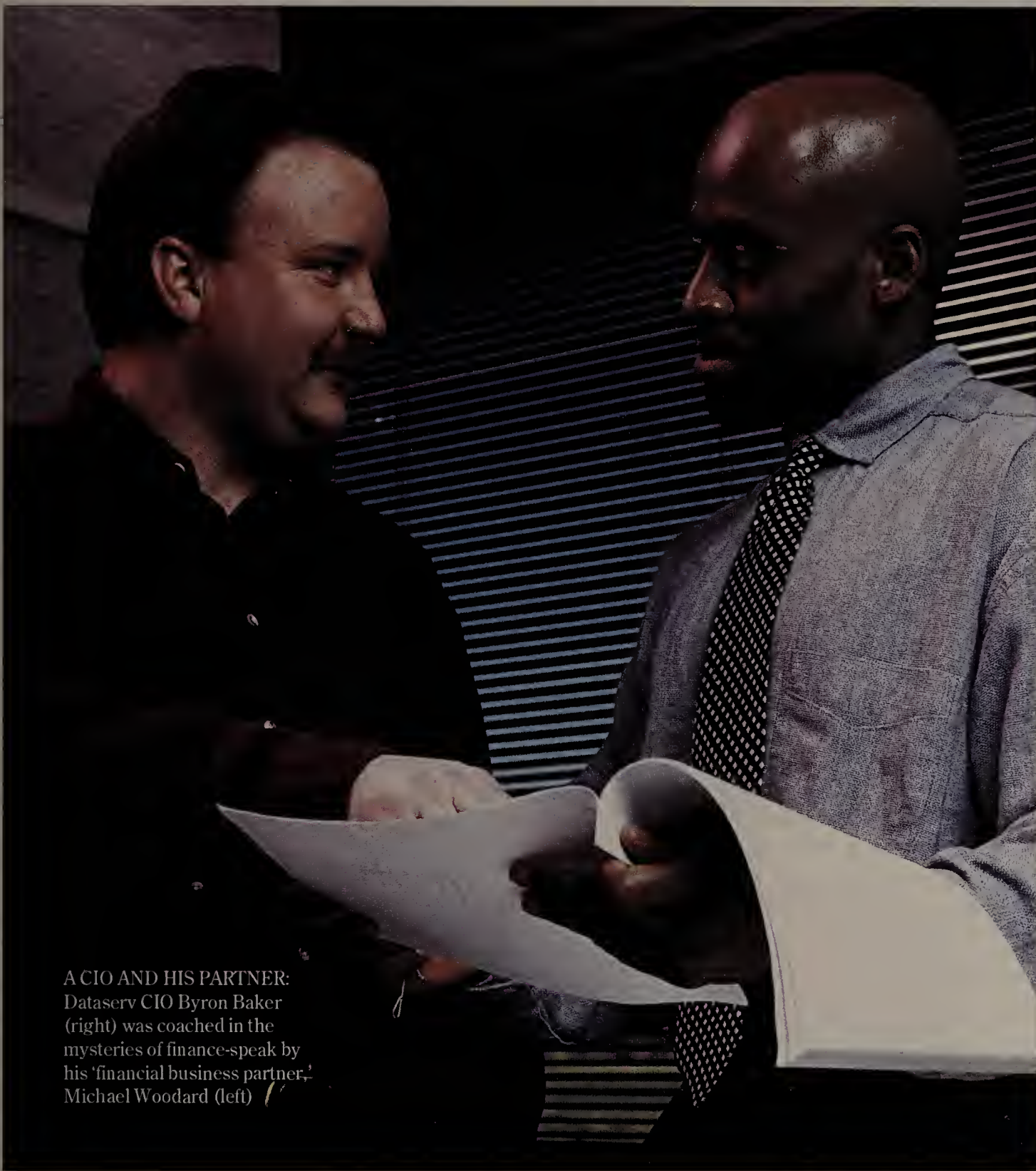
Baker thought a financial business partner could help him sort out business unit ROI claims.

his IT dollar in ROI terms. A financial business partner also would pressure business unit managers to come up with good ROI figures for IT investments.

So early last year, Mainor assigned to Baker a business partner from the financial department. That arrangement didn't work out because the partner, a relatively minor finance official, knew too little about information technology.

Baker then asked Mainor to appoint Woodard as his business partner. Woo-





**A CIO AND HIS PARTNER:** Dataserv CIO Byron Baker (right) was coached in the mysteries of finance-speak by his 'financial business partner,' Michael Woodard (left)

dard previously had worked for a company that managed databases used in direct marketing. He understood the language of IT as well as the language of finance.

Mainor and Woodard liked the idea.

The treasurer says he felt IS could benefit from the business partner concept. Dataserv's bottom line also would benefit.

three-part approach: Check the ROI justification for projects, decide whether a needed IT product or service should be obtained in-house or outsourced, and track the progress of the project.

Among the questions Woodard routinely asks business units are the following: Exactly how much revenue are we going to get for this IS project? Is it pie in the sky, or do we have a customer today?

do a better job of corporate budgeting and seeking approval for information technology spending plans.

Mainor says there's no question the Baker/Woodard business partnership works.

Before Baker got a business partner, information technology projects often took 25% to 30% longer than expected and cost 15% to 20% more than projected.

What kind of margins do you expect? If it's something you want to go out and sell, has anybody done a market study to see what the potential is? Is this something customers are going to take in-house after they learn how to do it themselves?

Baker says it helps to have Woodard along to ask questions in IT project meetings with divisional executives. "That's an invaluable asset," he says.

Woodard also teaches Baker how to

These days, those same projects "are being delivered on time and pretty much on budget. If there are any variances, we know what they are and why."

And Baker is learning the language of finance, Woodard says. "Byron's starting to ask me questions he wouldn't have known to ask before because that's not how an information technology person would talk." ■

Alexander is a freelance writer in Edina, Minn.



**www.BRRRRR!.com**

**T**alk about workflow: From his office in Austin, Texas, Philip Brennan helps manage a team of programmers he's never met, in a place he's never been. The place is Siberia, and the preferred mode of communication is the Internet.

Brennan, president of venture capital firm Transcendental Automation, drums up business in the U.S. from start-up software companies that can't afford the \$50 per hour charged by domestic programmers. His partner, Vladimir Vaschenko, oversees nine full-time and about 20 part-time programmers in a university town near the Siberian capital of Novosibirsk.



The Russians are skilled in Unix, Windows, C and C++, Brennan says, and have developed code for such tasks as PC-to-mainframe connectivity.

Brennan, a longtime mainframe programmer, and Vaschenko of the Institute of Mathematics of the Siberian Branch of the Russian Academy of Sciences, have sold contract programming since February 1993.

Revenue is well under \$1 million per year, but the business is profitable, and revenue should grow sixfold this year, Brennan says.

He acknowledges that 10% to 20% of his deals fail in the first month because of communications breakdowns between customer and programmer.

He says he's learned that electronic mail works better than the telephone because the Russians read and write English better than they speak it. Written comments also produce records for both sides to reference and force the writers to think through their messages.

The Russians struggle with winter temperatures of 40 degrees below zero Fahrenheit and earn approximately \$5 per hour, a 10th of the wages of their U.S. counterparts but five times the average for Russia, Brennan says.

But he warns against pitying the Russians, who see their work "as a means of making their country a wonderful place." The Russians are so skilled, in fact, that he tells them, "In 10 years, I'll be coming to Siberia to ask you for a job."

— Robert L. Scheier



# Summer school days

Feeling studious? IS managers can choose from plenty of executive education programs this summer.

Compiled by Leslie Goff  
Listings are alphabetical.

**Achieving Excellence in IS American Management Association (AMA)**  
Learn to use total quality management techniques to align information systems with corporate strategy, reduce development cycles and improve productivity.

**Location/Dates:** Washington; May 29-31

**Fee:** \$1,605 (nonmembers) or \$1,395 (members), including tuition and materials

**Contact:** AMA, 1601 Broadway, New York, N.Y. 10019; (800) 262-9699; E-mail: cust\_serv@amanet.org

**Current Issues in Managing Information Technology: Redefining IT Competencies for the Information Age Center for Information Systems Research (CISR), Sloan School of Management, MIT**  
Eight general sessions, 14 electives, a chief information officer panel and special interest groups will emphasize developing and maintaining a process-focused, team-based, learning-oriented organization.

**Location/Dates:** Hyatt Regency Cambridge, Cambridge, Mass.; June 17-20

**Fee:** \$2,750, including tuition, materials, lunches and special events

**Contact:** CISR, Building E40-193, MIT, 77

Massachusetts Ave., Cambridge, Mass. 02139-4307; (617) 253-2348

**Delivering Information Services Harvard Business School**  
Case studies, small study groups, discussions with top IS executives and lectures by Harvard faculty will facilitate ideas for building and managing a competitive IS infrastructure.

**Location/Dates:** Harvard Business School, Boston; July 14-26

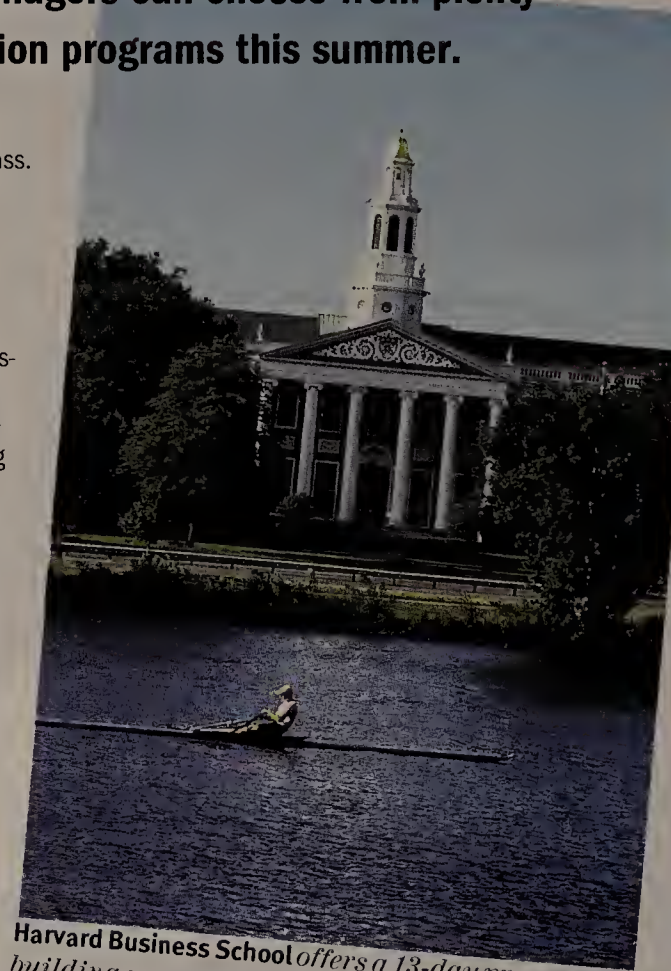
**Fee:** \$9,000, including tuition, books and materials, accommodations and most meals

**Contact:** Executive Education Programs, Harvard Business School, Soldiers Field Road—Glass Hall 200, Boston, Mass. 02163-9986; (800) 427-5577, ext. 428; Fax: (617) 495-6999; E-mail: executive\_education@hbs.edu; World Wide Web site: <http://www.exed.hbs.edu/>

**Disaster Recovery Planning: Ensuring Business Continuity AMA**

Build a strategy based on contingency planning concepts and learn how to sell it to top management.

**Location/Dates:** San Jose, Calif.; June 27-28



Harvard Business School offers a 13-day program in building a competitive IS infrastructure in July

**Fee:** \$1,375 (nonmembers) or \$1,195 (members), including tuition and materials

**Contact:** See Achieving Excellence in IS

**Executive Program for Growing Companies Graduate School of Business (GSB), Stanford University**

Course includes four IS-related sessions: Planning for IS, Business Impacts on IT, Re-engineering with IS and Strategy for IS

**Location/Dates:** Graduate School of Business, Stanford University; July 21-Aug. 2

**Fee:** \$9,200, including tuition, materials, accommodations and meals

**Contact:** Alyce Adams, GSB, Stanford University, Stanford, Calif. 94305-4024; (415) 723-9356; E-mail: adams\_alyce@gsb.stanford.edu; Web site: <http://www-gsb.stanford.edu/sep/sep95a.html>

**Global Information Management: New Concepts, Tools and Strategies Carnegie Mellon Executive Summer School, 1996**

Investigate how the convergence of broadband networks, wireless technologies and the Internet can effectively address business problems and provide competitive advantage.

**Location/Dates:** Graduate School of Industrial Administration (GSIA) Executive Classroom, Carnegie Mellon University, Pittsburgh; July 30-Aug. 1

**Fee:** \$1,750, including tuition, fees, books and materials, most meals and special events

**Contact:** Clark Jordan, director of executive education, GSIA; (412) 268-2304; E-mail: ccjordan@andrew.cmu.edu; Web site: <http://www.gsia.cmu.edu/executive>

**Managing Technology and Innovation**

**Aresty Institute of Executive Education, Wharton School of Business, University of Pennsylvania**

Examine the relationship between technology and strategy and how innovation can drive company progress.

**Location/Dates:** Aresty Institute of Executive Education, University of Pennsylvania campus, Philadelphia; June 16-21

**Fee:** \$4,550, including tuition, materials, accommodations and meals

**Contact:** Executive Education Department course consultants, (800) 255-3932; E-mail: [execed@wharton.upenn.edu](mailto:execed@wharton.upenn.edu); Web site: <http://www.wharton.upenn.edu/>

**Managing Telecommunications: Technologies Your Company Can't Do Without AMA**

Explore advanced technologies, acquisition and implementation management, and staffing issues related to telecommunications.

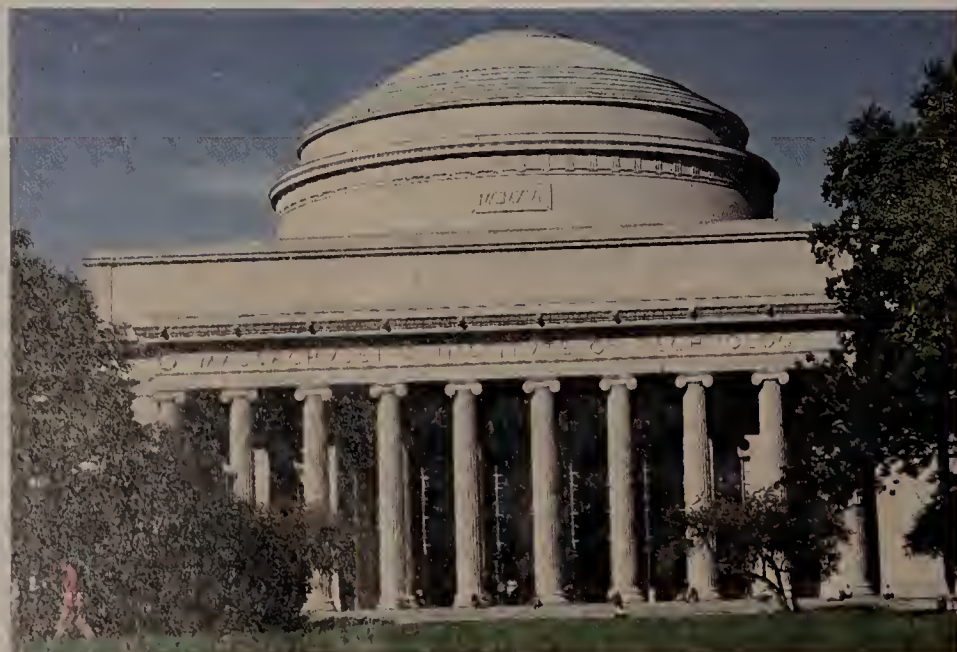
**Location/Dates:** New York, May 23-24; Boston, Aug. 19-20

**Fee:** \$1,435 (nonmembers) or \$1,250 (members)

**Contact:** See Achieving Excellence in IS

**The MIT Executive Short Course for Chief Network Officers: Managing the IT Infrastructure for Global Competitiveness Sloan School of Management, MIT**

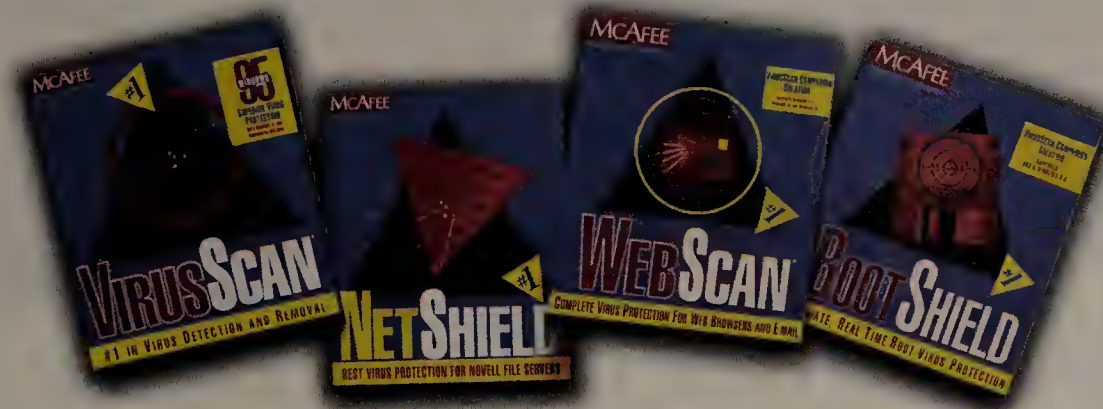
Lectures by MIT faculty, group discussions, Summer school, page 96



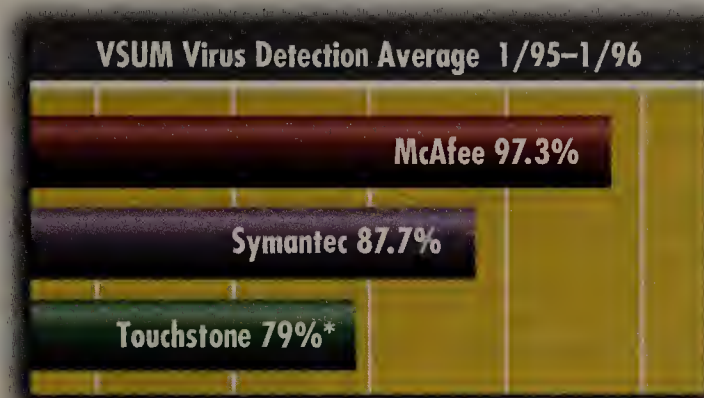
MIT will host a course for chief network officers May 20-24 and a multifaceted conference on Redefining IT Competencies for the Information Age June 17-20



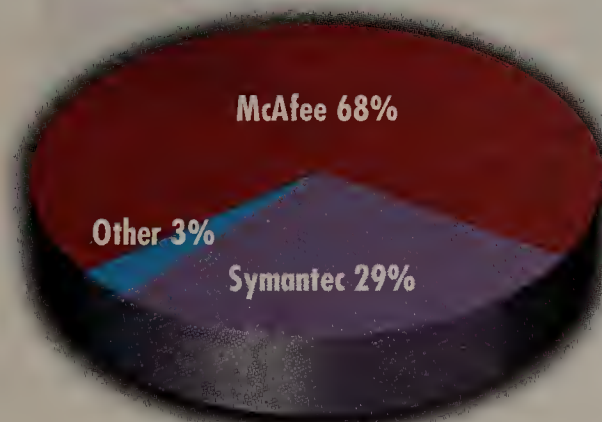
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Shipments - IDC, 1994

## JUST SOMETHING TO THINK ABOUT BEFORE TRUSTING SYMANTEC.

### "Symantec's little fib" - Information Week, 9/11/95

A lot of people disagree with Symantec's claim that they have the best virus protection. Even some Symantec people.

Vice President of Desktop Utilities, Ellen Taylor, said "we...regret any misconception..." that resulted from Symantec overstating its detection rate. *Information Week* described it as "Symantec's Little Fib."

*The San Jose Mercury News* added that "Symantec, with NCSA's urging, has acknowledged that it may have exaggerated a bit..."

Another Symantec ad misleads readers by comparing their desktop anti-virus product with McAfee's WebScan for the Internet. Advertising aside, just how good is Symantec virus protection? VSUM tests over the past year show that Symantec detected less than 88% of all viruses while McAfee VirusScan caught over 97%.



### "Norton's chicken soup not as foolproof as advertised" - San Jose Mercury News, 9/15/95

Maybe that's why McAfee virus protection is trusted by over 10 million users. More than all others. And maybe that's why 80 of the Fortune 100 trust McAfee's products.

To find out for yourself, just download any fully-functioning McAfee product. There are no encryptions or time bombs. We trust you to pay us if you decide to keep it. After all, virus protection is a matter of trust.

And now that you have all the facts, we trust you'll decide on McAfee.

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Summer school

CONTINUED FROM PAGE 94



Carnegie Mellon University offers a global information management program July 30 - Aug. 1 (see page 94)

case studies and exercises will consider the role of the chief network officer as a supporter of corporate strategy and 21st-century IS management techniques.

**Location/Dates:** Cambridge, Mass., May 20-24

**Fee:** \$4,600, including tuition, materials and most meals

**Contact:** Elizabeth Martin, MIT Sloan School of Management, 50 Memorial Drive, Room E52-101, Cambridge, Mass. 02142-1347;

(617) 253-7166; to inquire about course content, contact Jeanne Ross, (617) 253-9461 or jross@mit.edu



**Strategic Information Systems Planning American Management Association**

Sample case studies and other exercises focus on planning methodologies, how to perform situational assessment and setting the future direction of IS.

**Location/Dates:** Chicago, June 3-5; Johns Island, S.C., June 26-28; Williamsburg, Va., Aug. 19-21

**Fee:** \$1,550 (nonmembers) or \$1,350 (members), including tuition and materials

**Contact:** See Achieving Excellence in IS



**Strategic Uses of Information Technology Graduate School of Business, Stanford University**

(Wait-list only.) Class lectures by Stanford faculty and Silicon Valley gurus and group discussions will cover how to integrate information technology, operating procedures and staff into a competitive force.

**Location/Dates:** Graduate School of Business, Stanford University campus; May 12-17

**Fee:** \$5,000, including tuition, materials, accommodations and meals

**Contact:** Adonia Curry, GSB, Stanford University, Stanford, Calif. 94305-4024; (415) 723-7552; E-mail: curry\_adonia@gsb.stanford.edu; Web site: <http://www-gsb.stanford.edu/sep/sep95a.html>

INDUSTRY-SPECIFIC PROGRAMS

Education



**CAUSE Management Institute Association for Managing and Using Information Resources for Higher Education (CAUSE)**

**Location/Dates:** Boulder, Colo.; The Director Program, June 9-13; The Manager Program, Aug. 11-15

**Fees:** \$1,725 (nonmembers) or \$1,150 (members), including tuition, materials, accommodations and most meals; add \$200 for a single room; subtract \$200 if providing your own lodging.

**Contact:** Chris Vinall, CAUSE Management Institute Registrar, 4840 Pearl East Circle, Suite 302E, Boulder, Colo. 80301-6114; (303) 939-0317; fax: (303) 440-0461; Web site: <http://cause-www.colorado.edu/>

Government



**Advancing the Art of Fraud Control: Protecting Public Payment Systems Strategic Computing and Telecommunications in the Public Sector**

John F. Kennedy School of Government, Harvard University

**Location/Dates:** The Taubman Center, Harvard University, Cambridge, Mass.; May 30-31

**Fees:** \$660 (public agencies) or \$1,350 (private firms), including tuition, materials and most meals

**Contact:** Kate Gould, Strategic Computing and Telecommunications program, Harvard University, 79 JFK St., Cambridge, Mass. 02138; (617) 495-3036; E-mail: kate\_gould@harvard.edu

Manufacturing



**Program for Manufacturing Excellence Carnegie Mellon Executive Summer School, 1996**

**Location/Dates:** GSIA Executive Classroom, Carnegie Mellon University, Pittsburgh; June 2-7

**Fees:** \$2,750, including tuition, fees, books and materials, most meals and special events

**Contact:** see Global Information Management: New Concepts, Tools and Strategies

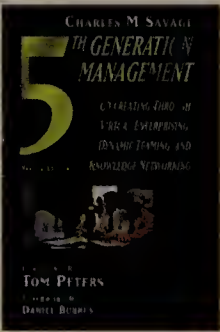
Goff is a freelance writer in New York.



IS Manager's Bookshelf

**5th Generation Management: Co-Creating Through Virtual Enterprising, Dynamic Teaming, and Knowledge Networking (Revised Edition)**

By Charles M. Savage  
(Butterworth-Heinemann, Newton, Mass.; 341 pages; \$17.95, paperback)  
Even though Tom Peters named *5th Generation Management* his business book



of the year when it first was published in 1991, it didn't get much notice. Savage, a former Digital Equipment Corp. consultant, was probably ahead of the times. But the newly revised edi-

tion of the book should find the larger audience it deserves, now that such concepts as virtual enterprises and knowledge management have caught on. Though it begins with a 90-page case study of an imaginary company that some will love and others will find off-putting, the book is a genuine mind-stretcher for any forward-thinking information systems manager.

— Allan E. Alter

**Engineering Your Writing Success: How Engineers Can Master Effective On-The-Job Communication Skills**

By James E. Vincler and Nancy Horlick Vincler  
(Professional Publications, Inc., Belmont, Calif.; 300 pages; \$29.95, hardcover)  
The conventional wisdom is that engineers hate to write, and shouldn't, because their logical, methodical minds



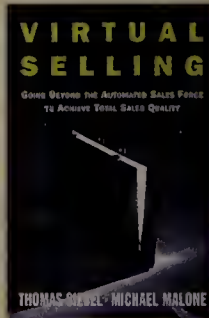
turn out lifeless prose. The Vinclers, who are professional writing coaches, offer a wealth of tips on writing different types of reports, proposals, data sheets and query letters; they also include a section on leading meetings. The tone is logical, detailed and no-nonsense — just right for the target audi-

ence. — Robert L. Scheier

ence. — Robert L. Scheier

**Virtual Selling**

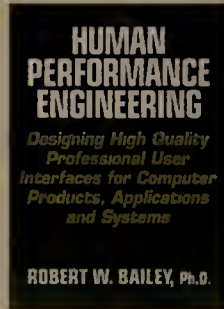
By Thomas M. Siebel and Michael S. Malone  
(Simon & Schuster [The Free Press], New York; 248 pages; \$26, hardcover)  
Why hasn't sales force automation met its full potential? The authors of *Virtual Selling* have an answer: Much of the time it's used to control sales-



people and capture data, not to make sales organizations more effective. The book is full of innovative ideas on how to use technology to sell, sell, sell, taken from real-life examples. Just think twice before you share it with your buddy in sales; it includes sales techniques that make road warriors superfluous (such as giving farmers Apple Newtons so they can order fertilizer directly from their fields, as Monsanto Co. has done). — Kay Carstens

**Human Performance Engineering: Designing High Quality Professional User Interfaces for Computer Products, Applications and Systems (3rd edition)**

By Robert W. Bailey  
(Prentice Hall PTR, Upper Saddle River, N.J.; 636 pages; \$70, hardcover)  
If you're under a tight project deadline and want quick tips for improving user interfaces, this is not — repeat, not — for you. This is a dry, rambling tome that covers every-



thing from brain structure to the proper height of chairs, while managing not to provide examples of good interfaces from existing systems. The tiny print, lack of color illustrations, disorganized presentation and textbook-style writing are especially annoying, considering this book is supposedly about creating quality interfaces. — Robert L. Scheier



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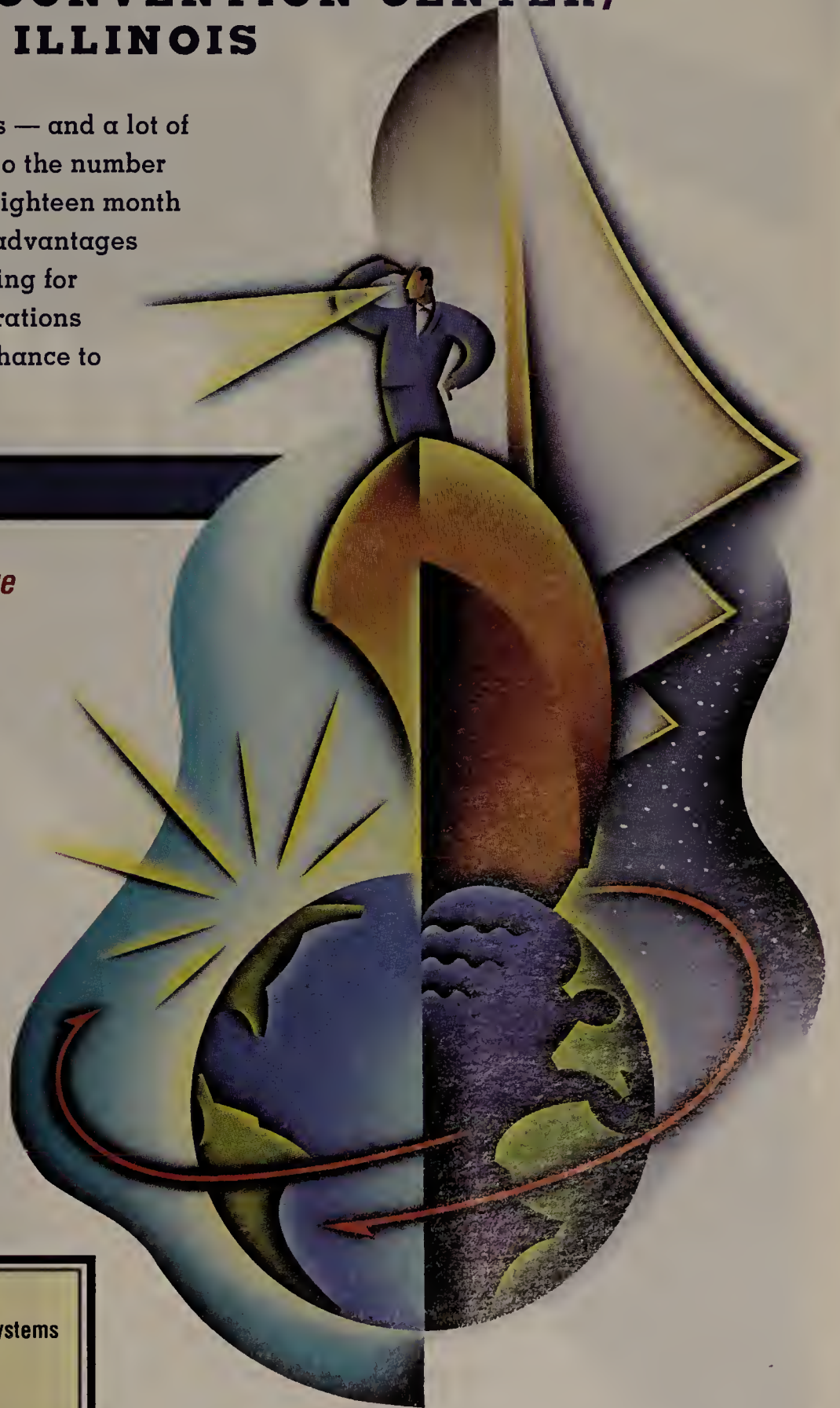
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# In Depth

From child pornography to counterfeiting to murder, investigator Frank Clark has seen it all. He offers IS tips on handling security, scams and hackers.

# the long arm of The Law

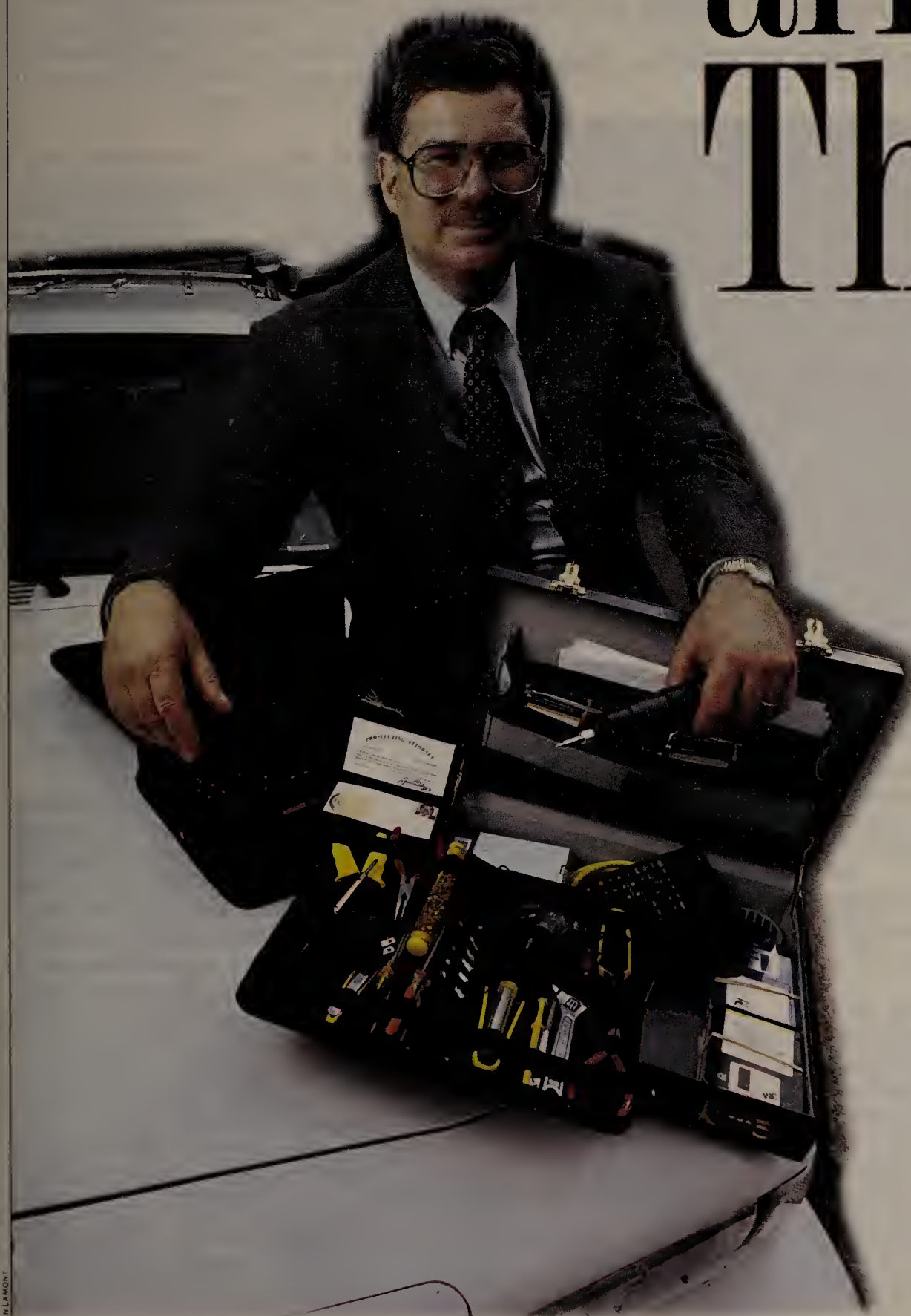
By Steve Alexander

FRANK CLARK works the dark side of cyberspace, dealing with hackers, online sex criminals and killers. During his years as a police investigator in Fresno, Calif., he won renown as one of the country's leading computer law enforcement agents when he captured an online pedophile and found key murder evidence hidden on a computer disk.

Now a criminal investigator for the Pierce County prosecutor's office in Tacoma, Wash., Clark specializes in white-collar and computer crimes. He also teaches at the Federal Law Enforcement Training Center in Glynco, Ga., and the Canadian Police College in Ottawa.

Does Frank Clark have anything to teach information systems professionals and managers? Oh, yes.

*The law, page 100*





# The law

CONTINUED FROM PAGE 99

**CW:** How worried should IS managers be about employees committing cybercrimes?

**Clark:** About 80% to 85% of computer crime losses are caused by insiders. Very often they're committed by the lowest paid people who have the lowest investment in the business. Sometimes they're committed by data processing folks who have the greatest computer access.

**CW:** What should IS managers look for if they suspect an employee of being a cybercriminal?

**Clark:** There is nothing about these people that makes them easy to identify. What we have seen are employees who seem to be very motivated and spend a great deal of time, even unpaid time, working on a computer. Usually they are people who have a grudge because they have been overlooked in the business or passed over for promotions. Often they exceed their authority: They help others to use the computer, and in doing so, gain access to parts of the computer they would not have access to in their jobs.

**CW:** What should IS managers do if they suspect employees of abusing the company system?

**Clark:** Get rid of them as quickly as possible. And never hire people who illegally entered or used [your organization's] computer system to help the company patch security holes. I've never seen it work. Quite the contrary; I've seen companies get beat up for doing it.

About five years ago in Fresno, some hackers got into the Cellular One cellular phone company and used voice-mail boxes to exchange stolen credit-card information. The company tried to use some of the hackers to firm up its security leaks, but all the hackers did was learn more about the computer system so they could abuse it to a greater extent. The basic morals and ethics of people don't change.

**CW:** What should IS managers do to keep from being taken advantage of?

**Clark:** Limit who has access to files and directories. Conduct regular security procedures, like having off-site backups, changing passwords every 90 days and not letting people use the

computers or passwords of others. And don't let employees post their passwords on little yellow stick-up notes. I can't tell you how many times I've gone through corporations where people had their passwords posted on their monitors.

Also, put a message on your system letting people know that if they exceed their authority on the system, they will be prosecuted. The system at the city of Fresno was compromised by two

**CW:** What problems do cybercrime investigators face when dealing with business?

**Clark:** Most computer crimes go unreported. Businesses are reluctant to report them because they lack confidence that law enforcement will investigate and prosecute the crimes successfully. Their second concern is damage to their business reputations if they report the crimes.

**"Information about how to illegally use credit cards, break into computers and misuse the phone system is being so rapidly disseminated that we're seeing an explosion. And it's going to get worse." — Frank Clark**



people who read other people's E-mail about union negotiations. They were terminated, but the district attorney wouldn't prosecute because there were no messages on the system that said E-mail was confidential or illegal use of the system would be prosecuted.

**CW:** If an IS worker is hacking from the employer's system, what kind of liability does the employer face?

**Clark:** That's a gray area. We don't have much case law dealing with computer thefts, piracy and hacking yet. But even if it's not a criminal problem, it could be a civil lawsuit problem. We had a major pornography bulletin board being run on a Fresno hospital computer system unbeknownst to the system's managers. What kind of civil liability would the hospital have if young children were getting pornography off the hospital computer?

Those are both valid reasons, but I think things are changing for the better when it comes to reporting computer crime because losses are becoming really widespread. And law enforcement is getting better at investigating.

**CW:** What are some typical scams?

**Clark:** Counterfeiting is a common computer crime. A computer scanner scans in checks or cash, and the images are printed on a color printer. About 70% of the time, the counterfeit cash passes as real money. And with today's quality of color scanners and printers, counterfeit checks are almost impossible to identify.

**CW:** How is the Internet affecting computer crime?

**Clark:** Kids can meet people on the Internet who have a great deal of crimi-

nal expertise and thus become experts in thefts. Information about how to illegally use credit cards, break into computers and misuse the phone system is being so rapidly disseminated that we're seeing an explosion in those types of activities. And it's going to get worse.

**CW:** What are some of the more interesting cases you've been involved with?

**Clark:** We had a pedophile bulletin board in Fresno that had advertisements looking for people under 18 to have sex with. I logged on and played the role of a 15-year-old boy. I was immediately hit on by the bulletin board operator, who sent me pornography and wanted to have a date. We sent a young police cadet we had wired for sound to meet him and arrested him. We later found he had kept records on his bulletin board of his membership and their activities.

**CW:** What about the murder case in which you found evidence on a disk?

**Clark:** The victim and her husband owned a computer store in Fresno in 1994. She was pregnant and supposedly was at home doing the business's books at the time she disappeared.

The husband was in a 12-step drug rehab program in which the fourth step is to admit all your wrongdoings. We thought she found what he had written down for this step before she disappeared. A few days later, we got a search warrant to search the house and found her body wrapped in plastic with chemicals to control the smell.

We seized the computer in the home and looked to see if she really had been sending business records to the office on the days when she was supposed to be working at home. The software showed no activity during the 10 days she was missing.

We didn't find the husband's drug rehab files on the computer, but eventually we got the disks containing them from his attorneys. The files we wanted had been deleted, so we hired a Macintosh engineer who restored the files. The files showed that as part of the fourth step, the husband had admitted spending \$35,000 on prostitutes and cocaine over one weekend. That's what the wife had found on the night she was killed. The husband was convicted of murder. ■

Alexander is a freelance writer in Minnesota.



A Monty Python sketch



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  - 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
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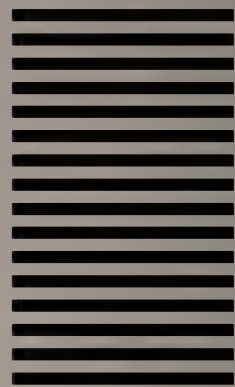
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# Computer Careers

## Damn, they're hot!

*After five years, C++ programmers still have the world by the tail*

By Lynn Haber

### C++ programmers.

Organizations simply can't get enough of them. Hiring managers will pay top dollar for them. And while C++ skills have been hot for about four or five years, the demand now is positively sizzling.

"Information systems employment is hot across the board, but C++ is the hottest of the hot," says Stephen McMahan, managing director at Source Services Corp., an employment recruiter in Boston.

Demand is strong in all industries: financial, manufacturing, distribution and high technology. Here's a sampling from the Boston market:

### Name your price

**"We'll offer \$80,000 to \$120,000 for someone with the right skill set."**

At John Hancock Mutual Insurance Co. in Boston, Richard Atkind has been actively seeking C++ professionals for the past year. As resource manager, Atkind works with a dozen local recruiters and maintains contacts with more than 60 others in his pursuit of this elusive talent.

Atkind works in the investment and pension sector of the company, which is pursuing its first large object-oriented development project. Throughout

last year, John Hancock worked with C++ contractors to keep the project rolling, but this year, the company wants to hire full-time C++ talent to lower costs by some 40% and to create an in-house knowledge base.

"The bottom line is that the market just isn't there," Atkind says. He says he has even had people just out of college turn down salary offers of \$60,000 to \$65,000.

### Gimme, gimme, gimme

**"In the course of a month, we get [more than] 100 requests for C++ professionals."**

McMahan says the staff at Source Services can't keep pace with the requests for C++ professionals that come in to the recruiting office regularly. It's a similar tale at Source Services' St. Louis office, where 200 requests for C++ programmers pour in monthly.

"This area of the country was a bit later than others getting on the client/server bandwagon," says Jack Deck, managing director at Source Services in St. Louis.

In Boston, with the exception of the retail industry and the Department of Defense, which are experiencing tough financial times, McMahan says that most industries are looking for C++

skills, and Visual C++ is the most in demand.

### Whatever it takes

**"We use our own employees as a resource and pay bonuses for helping to find C++ talent."**

Demand for C++ programmers has gone through the roof, the way Sue Rice sees it. As senior vice president of human resources at State Street Bank in Boston, Rice has had to get very flexible with job terms and work schedules to attract new C++ hires. "Supply can't keep up with demand," she says.

An organization with 12,000 employees worldwide, State Street currently has 205 C++ programmers on staff, but the bank wants to hire an additional 15 this year. The company uses recruiters in its quest for C++ talent. Other sources include newspaper advertisements, the Internet, career fairs and universities.

"Ideally, we're looking for full-time C++ employees, but we can be creative to meet people's schedules." Rice will offer salaries up to \$75,000, depending on experience. ■

Haber is a freelance writer in Norwell, Mass.

### It's gonna cost you

Hiring managers can expect to pay sizable salaries to attract C++ professionals (2-5 years experience)

**West Coast – \$70,000**  
**Central – \$65,000**  
**East Coast – \$70,000**

## Long-distance learning

### The state of IS education abroad

By Eli B. Cohen



*This week, Computerworld starts a series by Eli B. Cohen and Betty Boyd on computing challenges and*

*information systems education in various countries and the fun of making Internet contact abroad.*

**W**e are making our way around the world, representing the Association for Computing Machinery's computer science education group, interviewing people to find out more about how culture and location influence IS education. Ultimately, what we find will influence the development of IS curriculum and IS courses.

Along the way, we are discovering more than we ever wanted to know about gaining Internet access on the road. Indeed, we are learning not to take anything for granted.

### Fiji

In Nadi, Fiji, our plan to check electronic mail was foiled; the hotel room had no telephone. Indeed, the phone directory for the whole country of Fiji is quite thin.

Our accommodations at the University Lodge in Suva had a

phone, but I never did connect via modem. Instead, I was able to make a direct Ethernet connection from my computer to the Internet via the University of the South Pacific campus connection. I downloaded my 60 awaiting messages from the point of presence server in about two hours. That isn't a misprint.

IS education at the University of the South Pacific developed around its own opportunities and constraints. IS isn't given the same level of resources in the South Pacific as are more important majors, such as tourism and home economics. In one case, a professor who taught a course on microcomputers in the island nation of Vanuatu used his housing allowance to hire a computer lab tutor so the lab could stay open for his students.

Hans Danford, head of IS at Fiji's Post, Telephone and Tele-

graph (PT&T) told us that PT&T provides individuals and businesses with Internet access, but such access wouldn't be as simple as dialing a local number. In Fiji, Internet access isn't yet common.

### New Zealand

In Auckland, New Zealand, Lech Janczewski, a lecturer at the University of Auckland, helped us get our E-mail. He says Internet access in Auckland is sporadic, ranging in speed from almost instantaneous to painfully slow. New Zealand has an outstanding IS curriculum.

In New Zealand, IS isn't as business-oriented as in the U.S. and typically is housed in the college of informatics with the departments of computer science and telecommunications. Unlike Fiji, IS is well recognized as important to the future of the country.

Russell Bugden, head of the IS

department at Manawatu Polytechnic in Palmerston North, says Manawatu's curriculum was developed in a most practical way. The faculty found out what employers needed from their graduates and designed the courses to meet the employers' needs.

The most impressive part of the trip so far was our visit to the University of Otago, at the remote tip of New Zealand. Here the faculty of informatics occupies three full floors of offices in a modern building. There appears to be a synergy with IS being taught alongside computer science. I wonder if some business focus is lost. But at least I was able to pick up my E-mail without any problems. ■

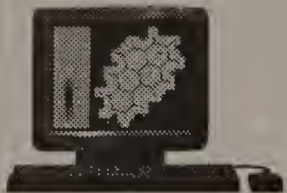
Cohen is a professor of IS education. He can be reached through the Web page on global IS education at <[http://www.acm.org/eli\\_cohen/globalis.htm](http://www.acm.org/eli_cohen/globalis.htm)> or at [Eli\\_Cohen@acm.org](mailto:Eli_Cohen@acm.org).



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Programmer Analyst to perform software application development including analysis, design, implementation and testing using C, C++, Visual C++, SOL in a client-server environment on a UNIX MS-DOS, MS-Windows Operating System; X-Windows, MOTIF, TCP/IP, Sockets, XDR, RPC, Shell Programming, MFC, Sequent, SunSparc 20, DEC Station 5000/200, PC, RISC System/6000, Frame Maker, XDBX, Lex, Tar. Require Master in Computer Science and 6 mos. exp. as a Software Programmer which includes design, development, and testing using C, C++, Visual C++, SQL, X-Windows, Motif, and network programming using TCP/IP, Sockets, XDR and RPC on UNIX. 40 hr. wk. 9am-5pm. \$50,000/yr. Send resume to 7310 Woodward, Rm 415, Detroit MI 48202, Ref. #57496. Employer Paid Ad.

PROGRAMMER ANALYST [2 openings] (Ref: 55496) to plan, develop, test & document comp. programs; apply knowledge of programming techniques & comp. systems; evaluate user requests for new or modified programs to determine feasibility, cost & time required, compatibility with current sys. & comp. capabilities; consult with users to identify current operating procedures and clarify program objectives; formulate plan outlining steps required to develop program using structured analysis & design; convert project specifications, using flowcharts & diagrams into sequence of detailed instructions & logical steps for coding into language processable by computer; apply knowledge of computer programming techniques & computer language. Reqs: Bachelor's in Computer Science, Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equiv. in ed. & exp. 1 yr. exp. in the job offered or 1 yr. exp. in a related occup. such as a Programmer, Programmer Analyst, Systems Analyst, Software Engineer or Consultant. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in the job offered or in a related occup. in lieu of the req'd. ed. & exp. Must have some related exp. including analysis, design & development & using each of the following: SOL Server, Visual Basic, MS Visual C++, LAN Manager and ODBC. \$39,000/yr, 40 hrs/wk, 8a-5p. Send resume to 7310 Woodward Ave, Rm 415, Detroit, MI 48202 & include Ref. #. Employer Paid Ad.

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- Strong communication and interpersonal skills
- CICS, COBOL applications development
- Background as vendor or consultant

### MVS Application Integrators

Your skills will drive the host-based integration of a client/server architecture for a gigantic utility application, offering you ample opportunities to develop and showcase your talents. This 3.5-million line application has a C++ and OS/2 front end driving an MVS, CICS, DB2 and COBOL back-end, and we believe it represents the future in the dramatically changing utility industry, driving phenomenal growth. Your 5+ years experience will encompass:

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- CICS, MVS UNIX, COBOL, Easel

### Database Architect

As a member of the team developing a 3.5 million line client/server application for the utility industry, you will design host DB2 architectures. To help drive this exciting challenge, you'll need 5+ years experience including knowledge of:

- DB2, SQL, QMF and CICS in an MVS environment

### Client/Server Programmers

To help create an advanced client/server application for the utility industry, we're looking for programmers with experience in large customer information systems, including the areas of billing, budgets and financials, feedback, dispatch and scheduling, and adjustments, transfers and charges. In addition to strong C programming skills, your 5+ years experience should include:

- Strong analytical and communication skills
- OS/2/PM or Windows NT
- DB2, SQL, QMS and CICS on an MVS platform

### Programmer Analyst

Put your experience driving major conversion efforts from flat files or IMS to DB to work as a host programmer using C/C++, COBOL, CICS, SQL and Expediter to develop an advanced client/server application for the utility industry. Your 5+ years experience should be well rounded, and would ideally include:

- Large customer information systems
- Utility background

### Technical Architect

Working directly with clients, you will communicate client/server architecture issues and answer questions relating to performance and capacity to help market a large client/server application. In addition to strong customer service skills gained through 5+ years experience, your technical background should encompass:

- Capacity planning
- CICS, DB2, SQL, QMF and COBOL in an MVS environment
- OS/2 or Windows NT exposure

### DB2 Database Administrator

In addition to maintaining database structures and providing all database support, you will be a technical resource to our development staff, requiring significant COBOL and CICS understanding. Your 5+ years experience should also include:

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### Process Control Clerk

Monitoring the nightly batch window will be your primary responsibility, supporting the development of a very large client/server application. To be successful your experience should include:

- DB2, SQL, QMF, COBOL, JCL and ISPF in an MVS environment

### Application Programmer

As lead architect for various projects in the health care industry, you will write requirements as well as plan and manage all development activities, providing both technical and management leadership to a group of developers. Your experience in all aspects of C++ design, coding, test, and project management should incorporate:

- Excellent communication and customer service skills
- Software testing

### Programmer Analyst

You will support corporate applications for a utility requiring outsourced data processing. To meet the challenges of this position, your experience should include excellent team skills and significant design and application development experience, including:

- C or C++
- VSAM, TSO/ISPF, JCL, OS/MVS/ESA, COBOL, CICS, DB2, OS/2

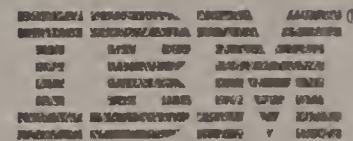
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# Regional Scope: Boston

## It's *awesome* heah!

By Julie Hart

### Worth the trip?

What IS professionals can expect to earn in Boston:

Annualized salary

#### Computer programmers

Low level .....	\$32,600
Mid level .....	\$39,500
High level .....	\$48,000

#### Computer systems analysts

Low level .....	\$47,700
Mid level .....	\$56,800
High level .....	\$68,800

#### Computer systems analyst supervisors/managers

Low level .....	\$63,500
Mid level .....	\$75,700
High level .....	\$85,000

#### Computer operators

Low level .....	\$24,100
Mid level .....	\$29,300
High level .....	\$37,100

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, Boston

Boston is known worldwide for many things: the Marathon, the Massacre, the Tea Party, the Strangler and, in past seasons, its great sports teams.

It's also the hub of one of the nation's premier high-technology job markets. And unlike the Red Sox management, job seekers in Boston can say that things look very good indeed.

"High tech is booming in the Greater Massachusetts area," says Gil Lawrence, manager of human resources at Information Access Co., an information- and text-retrieval company in Medford, Mass.

The Boston market can be separated into three categories: "financial services, high technology and defense," says Kevin Steele, president of Winter Wyman & Co., a recruiting firm in Waltham, Mass.

Defense has fallen off, and high technology now is Boston's shining star.

But Boston also boasts leaders in the academic, health care and financial services industries. The result is high demand for talent and often high salaries. That's making it difficult for many hiring managers to compete.

"We're often looking for people with client/server skills," says Michael Hernon, chief information officer for the city of Boston. But because the private sector typically pays 25% to 33% more than the city can afford, it's tough for it to find qualified candidates.

The skill sets most in demand include Sybase, Inc.'s SQL Server

### What's up?

Boston is one of the country's leading historic and cultural cities. Among its many offerings:

#### ATTRACTIONS

The Freedom Trail  
Boston Computer Museum  
The Children's Museum  
Museum of Science  
New England Aquarium

#### CULTURE

Boston Symphony Orchestra  
The Boston Pops  
Boston Ballet  
The Museum of Fine Arts

#### SPORTS

Boston Marathon  
Boston Bruins  
Boston Celtics  
New England Patriots  
Boston Red Sox

and Powersoft Corp.'s PowerBuilder, Hernon says. "People with hands-on client/server experience have the best job opportunities [in Boston]," he says.

Meanwhile, the Administrative Computing Center at Boston University has several openings for professionals with mainframe skills, including an Adabas administrator and a complex instruction set computing programmer.

"It's getting tough to find people to fill mainframe positions," says Joe DiBlasi, director at the computing center. "Most people here are interested in newer technologies like C++ and Unix," he says. "Boston offers [people with these skills a] tremendous opportunity.

Networking is exploding here just like in California." But this competition for newer skills means salaries at the entry level are about \$10,000 less than in Silicon Valley, says Koti Nandipati, manager of systems at the Dana-Farber Cancer Institute in Boston.

According to Steele, many companies are moving toward emerging technologies, such as the Internet. "A year ago, only about 10% of our clients were getting involved in the Internet. Today, that number has jumped to about 50%," Steele says.

There also is high demand for information systems professionals at software companies, consulting firms and other high-technology-related companies. Positions most in demand include software development project managers, database administrators and technical support specialists, says Brad Leland, owner of Koteen Associates, an IS placement agency in Wellesley, Mass. ■

Hart is a freelance business writer in Mercer, Calif.

### Gimme shelter

Home buyers in the Boston area have paid the following median prices for housing:

1992 .....	\$171,000
1993 .....	\$173,000
1994 .....	\$179,000
1995 .....	\$179,000

SOURCE: National Association of Realtors, Washington

### Get to work

Unemployment rates in the metropolitan Boston area:

Annual average

1992 — 7.5%

1993 — 6.0%

1994 — 5.2%

1995 — 5.1%

Feb. 1996 — 4.6%

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, Boston



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*Refers to their debt level.*

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*Not to mention Chapter 11.*

*Most programmers supplement income by singing in subway.*

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### ■ ANALYST

In this high profile position, you'll analyze, plan, and process work flows, provide project cost estimates, prepare specifications, monitor check conversion programs/tables, implement QC programs, train staff members, and ensure high standards of customer service. Qualifications include experience in an IBM mainframe environment, working knowledge of JCL and UNIX, and effective interpersonal and communication skills. A BS in Computer Science, Math or related discipline is necessary. PC skills a plus. Job Code: A.

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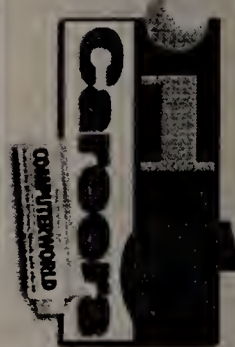
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Financial Systems, structured analysis, HP MPE/iX, and TurboIMAGE experience required. (Speedware V6/7, RPG, any 4GL exp. a plus.) Mail resume and salary requirements to: Lee County Clerk of Courts, IS Director, PO Box 9384, Ft Myers, FL 33902. Or fax to 941-335-2440.

PROGRAMMER/ANALYST/LE-VEL I: (2 positions) 40 hrs/wk. 8 a.m. - 5 p.m., \$39,000/yr. Carry out the systems analysis, systems design, coding and testing of computer software application systems under IBM mainframe environment utilizing DB2, CICS and COBOL. Req. Bachelor's degree in Computer or Electrical or Mechanical Engineering. Employer is a s/w development/consulting firm. Relocation to client sites throughout the U.S. for periods of 6 mos. to 2 yrs. required. "Employer paid ad." E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No: 57796.

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Systems Architect, 40hrs/wk., 9am - 5pm, \$54,600/yr. Research, design & develop computer software systems for business & manufacturing systems. Tools: MVS/ESA; COBOL; CICS; UNIX/AIX; C; PL1; IMS; VSAM. B.S. in Computer Science as well as 3 years experience in job offered or as Systems/Programmer Analyst required. Previous experience must include: MVS/ESA; COBOL; CICS; C; PL1; IMS; VSAM. Must have proof of legal authority to work permanently in the U.S. Send two copies of cover letter & resume to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, IL 60605, Attention: Mary Millea, Reference #V-IL-14756-M. NO CALLS. An Employer Paid Ad.

PROGRAMMER ANALYST [2 openings] (Ref: 57196) to plan, develop, test & document comp. programs; apply knowledge of programming techniques & comp. systems; evaluate user requests for new or modified programs to determine feasibility, cost & time required, compatibility with current sys. & comp. capabilities; consult with users to identify current operating procedures and clarify program objectives; formulate plan outlining steps required to develop program using structured analysis & design; convert project specifications, using flowcharts & diagrams into sequence of detailed instructions & logical steps for coding into language processable by computer; apply knowledge of computer programming techniques & computer language. Reqs: Bachelor's in Computer Science, Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equiv. in ed. & exp. & 2 yrs. exp. in the job offered or 2 yrs. exp. in a related occup. such as a Programmer, Senior Programmer, Programmer Analyst, Analyst Programmer, Systems Analyst, Software Engineer or Consultant. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in the job offered or in a related occup. in lieu of the req'd. ed. & exp. Must have some related exp. including analysis, design, development and using each of the following: MS Windows NT, MS Visual Basic, MS Windows SDK, MS Visual C++, MS SQL Server, LAN Manager and ODBC. \$43,000/yr, 40 hrs/wk, 8a-5p. Send resume to 7310 Woodward Ave, Rm 415, Detroit, MI 48202 & include Ref #. Employer Paid Ad.

Senior Systems Analyst  
Design, develop, implement, analyze and modify sophisticated customized SAP R/3 Materials Management and Production Planning Software Systems for use by large multi-divisional companies. Confer with clients in analyzing operational software procedures, requirements, and products to improve existing software computer systems; and identifying and resolving system-specific issues. Design and modify computer software system and functional specifications as required for various modules. Implement software design changes according to client objectives. Create user documentation requirements, generic user documentation for use by end-users, and module applications systems testing methodology. Other duties and responsibilities include but are not limited to providing high-level technical advice and training to on-site Systems Analysts, Programmers, and professional computer staff; and documenting assigned phases of each aspect of software design. Requirements: B.S. degree in Computer Science or related discipline, and one (1) year work experience in SAP R/3. Must be knowledgeable and proficient in SAP R/3 software systems, and highly specialized computer software systems applications. 40 hrs/wk., Mon.-Fri., 8 a.m.-5 p.m., \$120,000/yr. Send resume to: CW-173106, Computerworld, Box 9171, Framingham, MA 01701-9171 or fax to 508-620-7739 referencing CW-173106.

Hardware Engineer: responsible for detailed Very Large Scale Integration (VLSI) Circuit design of components of a low-power VLSI Microprocessor. Requirements are an MS in Electronics or an MS in Electrical Engineering with 6 months of experience in job offered or 6 months of experience in low-power VLSI design with graduate courses 3 hrs. each in VLSI Circuit Design, Integrated Circuit Technology, Computer Organization and background in Semiconductor Device Physics (gained in doing a research project or research with a professor;) demonstrated ability in SPICE circuit simulator and relevant Hardware Description Language (HDL) Computer Aided Design tools (gained in doing a project in design and development or design and development with professor) is required. Location of position: Austin, TX 40 hr. work week: 8:15 am to 5:00 pm M-F. Salary \$46,384.00 per yr. Apply at the Texas Employment Commission, AUSTIN, Texas, or send resume to the Texas Employment Commission, 1117 Trinity, Room 424T, Austin, Texas 78701, J.O. # TX 7856304. Ad paid by An Equal Opportunity Employer.

Software Development Consultant. Provide services to clients in design & development of credit analysis applications & systems; design, develop & re-engineer modules, test & install scripts, convert file server versions of applications to client server mode using HP2000 server, TCP/IP & Novell Network LANS, & UNIX machines; develop & write program codes with Sybase, Oracle, 4D SQL server & develop customer database software with 4th Dimension, Macintosh, C++ & Windows; transfer data between multi-windows platforms LAP LINK, TCP/IP, Windows API, Microsoft Word & 4D Write; provide technical support to users, test, debug, modify & maintain client systems. \$45,100/yr. B.S. or equivalent in Computer Sc., Computer Eng. or Electronics & Industrial Electronics & 2 yrs. exp. in job offered or 2 yrs. related exp. as Systems Analyst, or Programmer Analyst or Software Consultant. 2 yrs. related exp. must show use of HP2000, UNIX, TCP/IP, 4th Dimension SQL Server, Novell Network LANS, Macintosh, C++, Windows API, LAP LINK, Microsoft Word & 4D Write. Submit 2 copies of resume to Case #60149, PO Box #8968, Boston, MA 02114.

Consultant/Software Engineer, 40hrs/Wk., 9am - 5pm, \$50,000/yr. Design, development & implementation of software applications for management information systems. Database design & management. Tools: AS/400; OS/400; DB2/400; SYNON/2E; COBOL/400; RPG/400; C; SQL/400; QUERY/400; WINDOWS. "B.S. in Computer Science as well as 2 yrs. experience in job offered or as Software Consultant required. \*1 yr. university education + 3 yrs. experience in software development is acceptable in lieu of B.S. Previous experience must include: AS/400; SYNON/2E; COBOL/400; RPG/400; CL. Must have proof of legal authority to work permanently in the U.S. Send two copies of cover letter & resume to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, IL 60605, Attention: Ruth Daniels, Reference #V-IL-14639-R. NO CALLS. An Employer Paid Ad.

Consultant, 40 hrs/wk, 9am-5pm, \$43,200/yr. Design, develop, enhance, maintain & port cross platform software on UNIX networked platforms such as HP/UX/PC/AS/400 using C, C++, UNIX systems programming (TCP/IP), device drivers & configuration management. Development of user interface using Visual C++. Use 4th generation language case tools such as SYNON. Development of data manipulators using Informix/ESQL/4GL. M.S. in Computer Science\* as well as 3 mos. in job offered or as Programmer Analyst required. (\*M.S. degree or completion of coursework including 18 credit hrs in computer-related courses also acceptable.) Previous exp must include: C/C++; Visual C++; UNIX; SYNON; AS/400; Informix/ESQL/4GL; TCP/IP. Send resume to: Job Service of Florida, 2312 Gulf-to-Bay Blvd, PO Box C, Clearwater, FL 34618-4090, RE: Job order #FL-1422065.

PROGRAMMER ANALYST: (2 positions) 40 hrs/wk., 8am-5pm, \$42,940/yr. Carry out program analysis, coding & testing of application S/W programs under UNIX or DOS environment utilizing MS-Windows, C and a relational database such as ORACLE or SYBASE or INFORMIX. Require Bachelor's degr. in Computer Science, Electrical or Mechanical Engrng and 2yrs. expr in job offered or 2 yrs. expr. in Systems Analysis &/or Programming &/or S/W Engineering &/or Computer Consulting. Require experience in programming utilizing MS-Windows and C. Employer is S/W consulting/development firm. Relocation to various client sites throughout the U.S. for periods of 6 mos. to 2 yrs. required. "Employer paid ad". E.O.E. Send resume to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. #31496.

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### Florida Community College Software Consortium Executive Director \$66,582.96-\$89,886.96

The Florida Community College Software Consortium invites applications and nominations for Executive Director. The Director is responsible for the overall direction, leadership, and support of the software consortium systems development and maintenance efforts. Specific responsibilities include working with Consortium colleges in analyzing and reviewing statistics on productivity, scheduling completion and staff performance related to all Consortium projects; ensuring quality assurance and database administration compliance; providing overall coordination of multiple systems development projects; and developing and maintaining a coordinating model for baseline systems, including process and data models. The position reports to the executive committee and will participate with these committee members in the development and implementation of Consortium standards, policies, and procedures.

The Florida Community College Software Consortium is a group of eight schools that represents nearly 50 percent of the community college enrollment in the state of Florida. The objective of the group is to create an industry-leading set of administrative computing applications, utilizing the latest technology within the context of a single, integrated database. Development of portions of the system, which will meet a broad spectrum of the computing needs of two-year colleges, has already been completed.

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- Five years of supervisory experience in information systems and services management.
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#### Preferred Qualifications:

- Course work and/or advanced degrees in computer science, business administration and/or related fields.
- Demonstrated success in multiple project implementations with complex higher education systems using Software AG's RAD and JAD methodologies.
- Knowledge of Florida Community College Software Consortium baseline systems.

#### Application Process:

The preferred starting date is July 1, 1996. Applications must be postmarked by May 24, 1996; the review of applications will begin June 3, 1996. In addition to a dynamic work environment, a competitive salary and benefits package is available. Nominations or letters of application with resume should be sent to:

Search Committee for Executive Director  
c/o Jackie House, Director of Human Resources  
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**Programmer Analyst:** Successful candidate must have solid cobol/cobol II, JCL, Easytrieve/Easytrieve Plus and VSAM skills sets. College degree preferred, or equivalent work experience. Must know and understand the mainframe. Knowledge of IMS or DB2 preferred.

**Programmer Analyst:** Successful candidate must have solid cobol/cobol II, JCL, IBM mainframe and ITS experience.

**Systems Analyst:** Must have at least four years experience in programming or systems analysis. Must include a minimum of two years programming experience in cobol/cobol II in an OS/MVS environment. Thorough understanding of IMS or DB2 concepts and facilities.

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Programmer/Analyst required by Specialized Software Consultancy & Systems Development Company. Duties: Analysis, Planning, Design, Development of Software programs(s) for clients(s). Evaluating user requirements for new or modified programs to determine feasibility, cost, time required, compatibility with existing Systems/Programs. Software languages/tools to be used includes ORACLE 7.0, Data Base Administration (DBA), SQL Form and SQL Menu. Travel required to various unanticipated client sites throughout the United States. Bachelors degree in either Math, or Science, or Comp. Science, or Engineering (any discipline) and one year experience as either a Programmer/Analyst or in the Related occupation as a Database Administrator, required. Minimum one years experience required as Database Administrator and in the use of the Oracle 7.0, SQL Forms, and SQL Menu operating systems such as DOS and UNIX. Job to be performed at Knoxville, TN and various unanticipated client sites throughout the U.S. 40 hrs a week, 8:00 AM to 5:00 PM. Salary \$42,000/yr. Send resume response to Charles Turner, TN Dept of Employment Security, 505 Market Street, P.O. Box 11088 Chattanooga, TN 37401. Refer to Job Order # TN 6200186.

**COMPUTER PROGRAMMING COORDINATOR:** Plan, schedule & direct development & preparation of computer programs using client server scheme. Consult with management, systems analysis personnel and end-users to clarify program intent, identify problems, suggest changes & determine extent of programming required. Study the system in use, analyzing all aspects of the business, including merchandise & stock requirements, documentation & codes used to identify goods, customers & manner of payment. Design computer screen displays. Develop programs, determining computer language & hardware equipment. Assign & coordinate work of programming personnel. Review test software. Direct preparation of manuals & other documentation. Will be using Unix, Unix Sybase, Visual Basic, Unix C, & Power Builder. Program sockets for Unix TCP/IP Bachelor of Science in Systems Engineering & 2 yrs. exp. in job offered; verifiable references; fluent in Portuguese & Spanish (written & spoken). Supervise 1-3 employees. 40/hrs. wk., 9 a.m. to 6 p.m.; \$680/wk. Resume to Job Service of Florida, 701 S.W. 27th Ave., Rm. 47, Miami, FL 33135-3014. Refer to Job No. FL-1410220.

Programmer Analyst (Atlanta, GA) - Analyze, design, develop & implement software for applications of banking, such as loan analysis & customer information. BS in Comp. Sci, Math, Physics, or related Eng. + 2 yrs/exp. Exp. in design & develop databases using Oracle 7; provide user interface using GUI tools (CASE, SQL\*FORMS, Oracle Reports, etc.); tune database & applications; provide backend support using Oracle tools (SQL\*PLUS, SQL\*LOADER, PRO\*C, PL\*SQL); implement applications using client/server technology on various platforms (DOS, UNIX, SOLARIS, PC/AT on Network LAN); develop documentation & train users. \$55K/yr., 40 hrs/wk, 8:30AM-5:00PM M-F. Send resume in dupl. to Georgia Department of Labor, Job Order #GA 5969853, 2934 N. Druid Hills Road, Atlanta, GA 30329-3909 or nearest Dept. of Labor Field Service Office. Must have legal authority to work in US. No fee charged.

Analyze user reqs, design, develop, implement information management systems on IBM/MVS hardware using DB2, CICS, and COBOL. 40 hrs/wk; 8AM-5PM; \$51,000/yr. Req. Bachelor in Comp. Sci., Math or any Engineering & 2 years experience. Employer is a computer consulting firm. Relocation to various client sites for periods of 6 months to 2 years is required. Send resume to Job Service of Florida, Alien Employment Certification, 2312 Gulf to-Bay Boulevard, PO Box C, Clearwater, Florida 34618-4090, Re: Job Order # FL-1417344.

**Systems Engineer - Atlanta** - to work in design and development of warehouse management system utilizing RF and barcode scanning technologies on AS/400 platforms. Requires RPG/400 and BS Computer or Electronic Engineering. \$48-57K. Fax resume to: Dir. Recruit., Box 960506, 770 995-0302.

Quality Assurance Engineers: Design, develop & maintain software design & program quality standards & apply to client/server environment; Develop & establish inspection, testing & evaluation methods using software development & PowerBuilder program's skills; Design program to evaluate testing procedure's precision & accuracy, data accuracy & software maintenance. 40 h/w, 8-5 \$45,700/yr, MBA in Operation Management & 1 yr in any software development/program position w/ PowerBuilder 4.0, SQA Team Test on UNIX/C & travel b/w client sites required. Resume to Fla. Job SVC, PO Box "C", Clearwater, FL 34618. Job#FL-1425147

**PROGRAMMER/ANALYST** to analyze, design, develop, implement, test, enhance and support multimedia front-end applications in a Macintosh and Windows based PC environment using Visual Basic, Visual C++, and SuperCard to interface with Access and Omniscor databases; Develop local databases in Omniscor 7, Access, Visual Basic and FoxPro to interface with ORACLE database to extract client data for CD-ROM applications; Optimize Access/Omniscor 7 databases for CD-ROM performance (searches, SQL criteria); Utilize Windows SDK, API and VBXs for Visual C++ implementations; Utilize Adobe Photoshop, Illustrator and Premiere graphics design utilities, Pascal and C/C++ programming languages, and data modeling techniques; Implement OLEs using Adobe Acrobat to display PDF files and edit documents; Prototype interactive database driven catalogs in Toolbook and SuperCard, and animations in Macromind Director. Require: B.S. in Computer Science and two years experience in the job offered. Salary: \$40,000/year; M-F, 8:30 a.m. to 5:30 p.m. Apply in person or by resume to: Georgia Department of Labor, Job Order # GA 5972368, 465 Big Shanty Road, Marietta, GA 30066-3303 or the nearest Department of Labor Field Service Office.

Programmer/Analyst required by Specialized Software Consultancy & Systems Development Company. Duties: Analysis, Planning, Design, Development of software program(s) for client(s). Evaluating user requirements for new or modified programs to determine feasibility, cost, time required, compatibility with existing Systems/Programs, processing data in various formats using Powerbuilder, Ingress and Oracle. Travel and relocation required to various unanticipated client sites throughout the United States. Requirements: Bachelors Degree in either Science, Math, Computer Science or Engineering (any discipline) and one year experience either as a Programmer/Analyst or in the related occupation as Software Engineer, or Systems Analyst, or Programmer. Must have minimum one years experience in the use of software languages such as Powerbuilder, Ingress and Oracle. Salary: \$42,000/year. 40 hrs/week. 8:00 AM to 5:00 PM. Job site: TN and various unanticipated client sites throughout the U.S. Respond with resume to Mr. Charles Turner, TN Department of Employment Security, P.O. Box 11088, 311 Martin Luther King Blvd., Chattanooga, TN 37401-2030. Refer to Job Order # TN 6200188

**Software Engineer:** Improve knowledge of VOS internals. Assist in development of Open StrataLink Client Server software; assist in OSL testing and problem resolution; assist in the configuration of new product testbeds and provide technical support to System Quality Assurance; Complete performance comparison of OSL over FDDI and product release 12.2 TCP against StrataLink and modify performance tests and obtain data for OSL performance analysis; Manage testbed configurations for OSL testing including software installation, start up procedures configuration files; Add support set jiffy times across StrataNet to improve useability. Knowledge of Sun UNIX internals, DEC VAX/VMS, IBM PC, Multi threaded programming and network programming (Client/Server) using TCP/IP, RPC, and sockets Demeter/C++ CASE Tool, C, UNIX, and GUI Tel/Tk an UNIX platform required. M.S. in Computer Science and 1 yr. exp. in the job offered or 1 yr. exp as Engineer-Simulation Software Development required. M-F, 9-5, 40 hrs/wk, \$43,275.16/yr. Send 2 resumes to: Case No. 60250, P.O. Box 9968, Boston, MA 02114.

Programmer/Analyst w/Bachelors/eqv in Computer Sci, Engg or related & 3 yrs exp in job offered or 3 yrs exp in software development for manufacturing applications, including minimum 1 yr exp using Rdb, COBOL, FORTRAN, TDMS & SQL in VAX/VMS. May have Masters Degree w/2 yrs same exp. Will plan, develop, test, document programs, modifying them to client requirements in VAX/VMS using DBMS, FORTRAN, & Rdb; consult w/user to ID current operating procedures/capabilities; develop program using structured analysis & design; convert project specs in VAX/VMS using Rdb, COBOL, FORTRAN, TDMS, DATATRIEVE, RMS & SQL; install & test program at user site; provide technical assist to users; travel to client locations in Metro Atlanta, GA as necessary. \$45,000/yr up DOE. Resumes only to GA Dept of Labor, Job Order GA5973358, 465 Big Shanty Rd, Marietta, GA 30066-3303 or nearest Dept of Labor Field Service Office.

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SYSTEMS ENGINEER to develop logistics and distribution models using linear and nonlinear programming and other operations research techniques such as TOM, MRP, Forecasting and Simulation; Perform algorithm and data structure development, Windows SDK development and logistics modeling; Design, develop and test advanced graphical windowing interfaces, operations models and algorithms, object and relational database models and geographic information systems using C/C++, Visual C++, Visual BASIC, DELPHI, MFC and OLE under MS Windows, Windows NT and Windows95 operating systems; Troubleshoot and provide user support for the systems and related application software and hardware both internally and to clients. Require: Bachelor's degree in Industrial & Systems Engineering with two years of experience in the job offered; A Master's degree in Industrial & Systems Engineering with a demonstrated ability to perform stated duties gained through previous work experience and/or education may be substituted for Bachelor's degree and two years of experience. Salary: \$39,540/year; M-F, 8:30 a.m. to 5:30 p.m. Apply with resume to: Georgia Department of Labor, Job Order # GA 5973375, 465 Big Shanty Rd., Marietta, GA 30066-3303 or the nearest Department of Labor Field Service Office.

COMPUTER OPERATIONS SPECIALIST (OR DATA COMMUNICATION ANALYST). Analyze the Accounts Receivable Billing, Accounts Payable, and Inventory Control menu systems. Search and identify the software and hardware. Read technical manuals and brochures to determine equipment which meets established requirements. Test and evaluate hardware and software to determine efficiency, reliability, and compatibility with existing accounting system. Search, determine and recommend hardware or software for purchase. Periodically update and maintain the hardware and software. Answer and fix the user's problems. Requirements: B.S. in Computer Information System/Management Information System. Must have knowledge of accounting principles and computer graphics, evidenced by at least one accounting and one computer graphics course. Salary: \$27,000 per year. 8:00 AM - 5:00 PM, 40 hours per week. Must be authorized to work in the United States. Send resumes to: Marilyn Thomas, Alabama State Employment Service, 2535 Sparkman Drive., Huntsville, AL 35810-3825. Refer to Job Order AL5059197. E.O.E.

SOFTWARE ENGINEER to analyze, architect, design, develop, maintain, test and support client/server software for telecommunication and similar mission critical applications using OOP and Rumbaugh's Object-Oriented methodology on UNIX and Windows platforms such as Windows 3.1, Windows NT, AIX, Solaris, SunOS and HP/UX; Develop X/Motif and MS Windows-based user interfaces using UIM/X, Visual C++/MFC or Borland C++/OWL; Develop reusable C++ class frameworks and applications for RDB application using SQL and embedded SQL, C/C++, Smalltalk, Oracle, Sybase, MS SQL - server and class frameworks such as RogueWave DBTools++ and Tools.h++; Develop object oriented database applications using Persistence, Objectivity or ObjectStore OODBs; Conduct software systems integration using PCTE open repositories; Utilize OO CASE tools including Paradigm - plus, OMT and Objectmaker; Perform UNIX systems programming involving UNIX IPC; Develop internet communication applications using OSI models and protocols including TCP/IP and UDP/IP, and distributed computing applications using Sun RPC/XDR or DCE packages. Require: B.S. degree in Computer Science /Engineering, or a closely related discipline, with one year of experience in the job offered or in the related occupation of Systems Engineer. Salary: \$50,000/year, M-F, 8am to 5pm. Apply with resume to: Georgia Department of Labor, Job Order # GA 5973400, 1535 Atkinson Rd., Lawrenceville, GA 30243-5601 or the nearest Department of Labor Field Service Office.

Programmer Analyst required by a Software Development and Computer Consulting Company. Duties: Analysis, planning, designing, developing, testing and documenting computer programs, applying knowledge of programming techniques and computer systems; evaluating user requests for new or modified programs to determine feasibility, cost and time required, compatibility with current system and computer capabilities; consult with users to identify current operating procedures and clarify program objectives with reference to the Database administration in Oracle 7, application development using SQL\*Forms, SQL Reportwriter and SQL\*Menu, UNIX. Job to be performed at Knoxville, Tennessee and by travelling and relocating to various unanticipated client sites throughout the U.S. Bachelors degree in either Math, or Science, or Comp. Science or Engineering and one year experience as either a Programmer Analyst or in the Related profession of Software Engineer/Systems Analyst, required. Must have minimum one year experience in Oracle 7.0 Database Administration, SQL\*Forms, SQL\*Reportwriter, SQL\*Menu & UNIX. Salary \$42,000/year, 40 hrs/wk, 8:00 AM to 5:00 PM. Send Resume to Charles Turner, TN Dept. of Employment Security, 505 Market Street, P.O. Box 11088, Chattanooga, TN 37401. Refer to Job Order # TN6200189.

Programmer/Analyst: \$40K/yr 8am-5pm, 40hr/wk. Analyze/dsgn/dvlp/implement & maintain user database appn to provide tech support to end users & to utilize Visual C/C++, Powerbuilder, Lotus Notes, Lotus ViP, Delphi, Visual Basic & Microsoft NT, & Novell Network to set & configure LANs and WANS. Must have Bach. or equiv. degree w/major in Comp. Sci or engg; or Electronics or Electrical Engg. 6mos exp in job off'd or in related job of Programmer or Network Administrator or Programmer Analyst. Must document either by study or work exp previous use of prgmg skills in Visual C/C++ Powerbuilder, Lotus Notes, Lotus ViP, Delphi, Visual Basic & Microsoft NT, & Novell Network to set & configure LANs WANS. Job located in Marietta, GA. Send resume or apply in person to: GADOL, JO# GA 5967258, 465 Big Shanty Rd, Marietta, GA. 30066-3303 or the nearest Dept. of Labor Field Service Office. Must have authority to legally work permanently in US. EEO/AA Employer.

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Programmer/Analyst required by Software Development & Computer Consulting Company. Duties: Planning, developing, testing and documenting computer programs, applying knowledge of programming techniques and computer systems, evaluating user requests for new or modified programs to determine feasibility, cost and time required, compatibility with current system and computer capabilities, consult with users to identify current operating procedures and clarify program objectives, work towards the development of Regional Automation Model Office Concept for decentralizing the computing capabilities and the related software using Power Builder with SQL Server/Sybase and VAX/VMS Rdb as a back-end database. Job to be performed at Knoxville, TN and by travelling and relocating to various unanticipated client sites throughout the United States. Requirements: Bachelors Degree in either Math, Science, Comp. Science or Engineering and one year experience either as Programmer Analyst or in the related occupation of Software Engineer/Systems Analyst. Must have minimum one year experience in Power Builder, VAX/VMS, Rdb/VMS and SQL Server. Job Site: Knoxville, TN and various unanticipated sites throughout the U.S. Salary: \$42,000/yr, Hours: 40hrs/wk, 8:00 AM to 5:00 PM. Contact: Charles Turner, TN Dept. of Employment Security, 311 Martin Luther King Blvd., P.O. Box 11088, Chattanooga, TN 37401-2088. Refer to Job Order# TN 6200185

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## PROJECT LEADER

We'll rely on your leadership to further the success of our Worldwide Logistics business systems application development and support. As manager of a staff of programmers, you'll have impact on the ongoing support of a range of new and existing applications. The demands of this position will further your minimum of 8 years' of experience in on-line and batch application development using structured development methodologies. In addition, you must have at least 2 years of AS/400, PC/client server or UNIX development experience.

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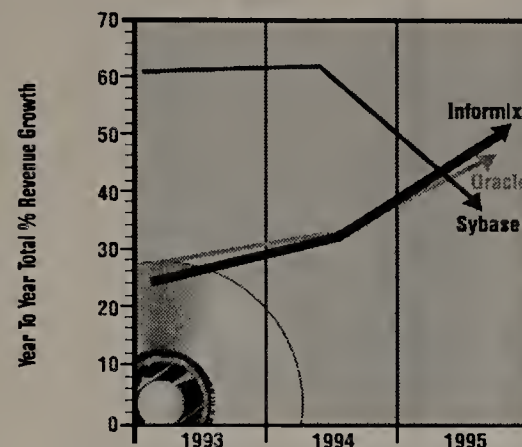
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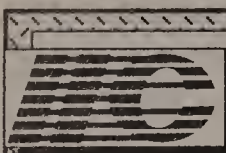
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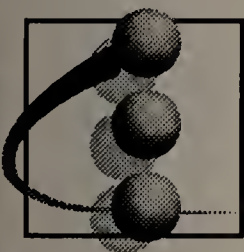
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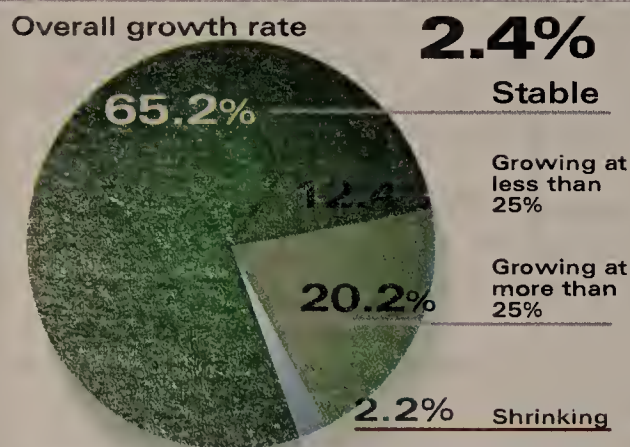
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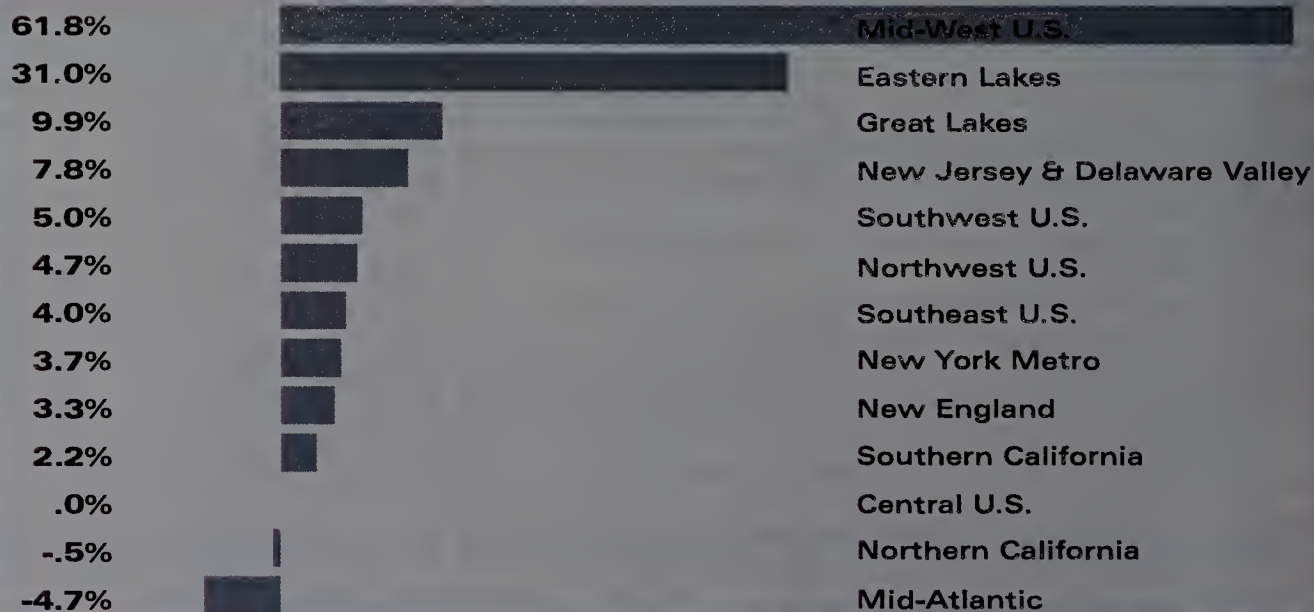
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# Marketplace

## Planning brings rewards with data warehouses

*Users say pace of business change makes data warehousing a corporate necessity*

BY ALAN EARLS

Building a massive data warehouse for 1,000 users "started as a leap of faith," acknowledges an information systems manager at a \$20 billion retailer. In the 10 months since the warehouse began operating, however, results have exceeded expectations, he says. But like many in an industry that is running willy-nilly to embrace data warehousing, this manager admits that hard data on actual payback is hard to come by.

"We just know that the company is making good use of the information we can now provide," he says.

That has been enough to justify appointing a team of 10 people to manage the data warehouse full time and control its growth. But crucial to moving ahead, the manager says, has been the support of a key corporate executive.

### Decision support is the goal

Justifying the project and getting corporate support are just two of the challenges to be found in implementing a data warehouse, a technology defined as an enterprise-scale database that is derived from one or more internal databases and intended for end-user decision support, according to consulting firm Aberdeen Group, Inc. in Boston.

Almost every company could benefit from quicker and better access to its aggregated data, but there are no stock formulas for predicting payback. That depends too much on the type of information a data

warehouse helps provide and on how the information is ultimately used, says Rich Finkelstein, president of Performance Computing, Inc., a consultancy in Chicago. Instead of predicting payback, users should identify a definite customer — "a user group that really wants to analyze data in a particular way," he says.

Most companies, Finkelstein says, should start with a narrowly defined scope — the so-called data-mart approach — rather than with a broad commitment to build a global data warehouse.

However, Robert Moran, director of decision-support research at Aberdeen Group, warns that starting small shouldn't be confused with thinking small. "You can start out with an application-specific approach, but you must keep in mind that the industry and your own business are evolving rapidly, so you must make sure you have the right data model behind a data mart," he says.

Moran says data warehouses typically triple in size every 12 to 18 months, in terms of the amount of information they contain. More often than not, additional customers appear once a warehouse is up and running. So it's crucial to make sure architecture and systems are scalable.

Then there are housekeeping details, such as making sure you build in the capability to "scrub" data so that it is normalized, no matter which database it came from originally. "That can be a big problem,

especially for banks because you always have to make sure information is as accurate as possible," Moran says.

Of course, improved quality of information is what data warehousing is all about.

### Data warehousing dos and don'ts

- ✓ Don't look for hard data on cash paybacks
- ✓ Do gain the support of a key corporate executive
- ✓ Don't get too ambitious at the start
- ✓ Do allow for rapid growth of your warehouse

Kelly Flynn, a database administrator/technology specialist at Flint Ink Corp. in Detroit, says his firm decided to try data warehousing in part because the company was always depending on information that was at least six weeks old and delivered in massive paper reports. Once the concept was in play, though, it became clear that data warehousing would also provide a convenient route away from the company's legacy system, he said.

"We had already begun migrating finance and other functions to midrange AS/400 systems, but the sales function was dependent on the mainframe," Flynn explains.

Flint Ink decided to build the data warehouse with in-house talent and a plan. About 1½ years before the target implementation date, Flynn and others started

attending seminars about data warehousing. "We spent weeks analyzing all the different products and methods," he says.

Another in-house implementer is Michael Prince, chief information officer at Burlington Coat Factory, Inc. in Burlington, N.J. There, the decision to pull the plug on the mainframe came first; then the retailer decided to build a data warehouse that would support not only decision-support activities, but also transaction processing, Prince said.

"That is not the classic approach, but others are beginning to move in that direction," he says.

For those wary of blazing trails themselves, help is abundant, Moran says. He says users can go to the Big Six accounting and consulting firms, "and you can and often must go to the hardware suppliers — especially parallel processor companies." In addition, some software vendors such as Platinum Technology, Inc. are starting to focus on the area. Finally, he predicts, value-added resellers "will be coming on like gangbusters in the near future with turnkey approaches to data warehousing."

And, Finkelstein adds, "Internet and intranet approaches to data warehousing are on the horizon that may make it easier to acquire data warehouse functionality without some of the current complexity."

Earls is a business writer in Franklin, Mass.

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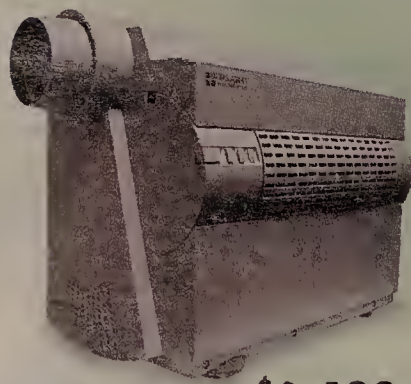
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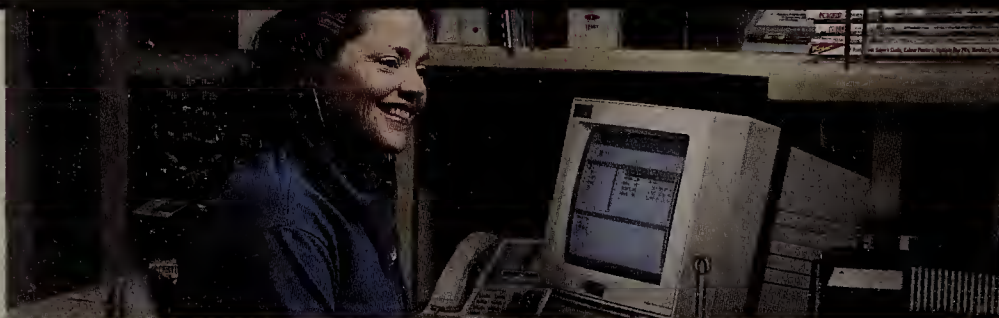


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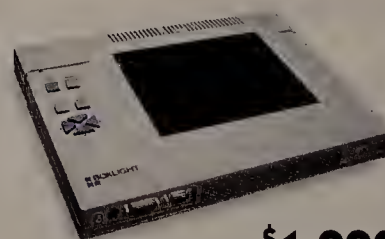
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## Streetwise

Giles McNamee

### Data warehousing on Wall Street

**D**ata warehousing, a relatively unknown strategy in 1994, has hit Wall Street in a big way.

The few pure data warehousing plays on the Street, such as Arbor Software Corp. (Nasdaq:ARSW) and Red Brick Systems, Inc. (Nasdaq:REDB), have doubled or tripled their initial public offering prices in just a few months. Analysts estimate that both companies will grow well in excess of 50%.

Data warehousing has become a hot buy because it is being embraced by corporate America. A recent survey of 145 large corporate information

technology managers by our research partner, Meta Group, Inc., found that 37% of respondents had already implemented an enterprisewide data warehouse strategy by the end of 1995. Deployments by these same users are projected to leap to 69% by year's end, reaching 83% by 1997. In dollar terms, we expect the market for data warehouse software to grow from \$1.1 billion in 1995 to more than \$4 billion in 1999.

As Wall Street's demand for data warehouse stocks shows, such rapid growth in user deployments can only mean opportunity for software vendors. However, the valuations of Arbor and Red Brick may scare



off all but the most aggressive investors.

But the pure plays, neither of which has yet passed \$20 million in revenues, aren't the only avenue for data warehouse investing. We believe that the primary beneficiaries of user demand for data warehousing will be the vendors of relational database management systems software, in particular Oracle Corp. (Nasdaq:ORCL) and Informix Corp. (Nasdaq:IFMX). Both companies have announced aggressive data warehouse programs and have made strategic acquisitions to

bolster their offerings.

Of particular benefit to Oracle and Informix is the decided tendency of IT managers to extend existing installations and knowledge as opposed to replacing installed products with new ones. Users want software with which they are already familiar.

Oracle offers value in addition to the opportunity to invest in data warehousing. The stock trades at a significant discount to its growth rate. Earnings are estimated to grow more than 30%, but the current stock price is only 25 times our earnings estimate of \$1.27 for the fiscal year ending May 1997. Informix is more fully valued, trading at 32 times our earnings estimate of 72 cents for the fiscal year ending December 1996. However, the company's shares offer a vehicle for investing in data warehousing without paying double-digit multiples of revenues. ■

McNamee is senior vice president and director of technology at First Albany Corp. in Boston. He welcomes comments at gwebb@fac.com.

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Don't be misled by the name. The Silicon Investor Web site at <http://www.techstocks.com> covers more than just semiconductor stocks, including 300-plus technology companies.

Investors can use the site to check the historical and comparative performance of tech stocks, as well as participate in online discussions of technology investment trends and particular stocks.

Looking for information on Sun Microsystems, Inc. (Nasdaq:SUNW), for example, I first checked the interactive calendar, which shows when various companies are expected to report earnings, go public or split their stock. Seeing that the company had just reported earnings, I went

to the Stock Talk section on Sun, which contained investor postings reacting to the report and commenting on the stock's most recent movements. Here is where the site seems to favor semiconductor companies.

For example, Sun's section included only eight postings on the day its earnings were released, whereas the Intel Corp. (Nasdaq:INTC) section included more than 40 postings on the day it disclosed earnings.

A useful feature is the chart generator, which graphs stock performance over a period of time ranging from 10 days to 100 months. You can graph by individual stocks or in groups, comparing one stock's performance to as many as six of its competitors.

The site also features 15-minute delayed quotes and company profiles that contain descriptions from 10K re-

ports, as well as links to company-supplied information.

The site requires registration if you want to post messages, add events to the calendar, create customized stock

groups to follow, or participate in its weekly poll of whether investors are bullish or bearish on tech stocks. ■

— Tam Harbert

#### Manufacturing marvels

The AMR Enterprise Application Index lists the stock performance of manufacturing-software companies. The 1995 index posted a 68% gain for 17 companies. Top performers were:

COMPANY	SYMBOL	GROWTH RATE 1995 TO 1996	
Project Software & Development	Nasdaq:PSDI		191%
PeopleSoft	Nasdaq:PSFT		160%
American Software	Nasdaq:AMSWA		117%
System Software Associates	Nasdaq:SSAX		112%

Source: Advanced Manufacturing Research, Boston



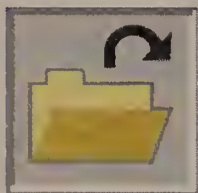


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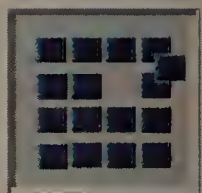
The reason is simple: most applications development activities center on capturing data, such as updating large databases while maintaining data integrity. But heavy-duty data input shouldn't be an end in itself.



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# The Week in Stocks

## Gainers Losers

### PERCENT

PSINet .....	47.8	Discreet Logic Inc. ....	46.8
UUNET Tech. ....	40.9	Intersolv Inc. ....	30.2
Intelligent Electronics .....	40.4	Arbor Software (H) .....	19.7
MICOM Communications Corp. ....	37.3	Centigram Communications .....	19.7
TranSwitch Corp. ....	34.3	Cheyenne Software Inc. ....	16.3
Systemsoft Corp. (H) .....	31.3	Intelligent Info. Systems .....	15.8
Sequoia Systems Inc. ....	28.0	AST Research Inc. ....	12.9
Racotek Inc. ....	25.0	Compuserve Corp. (L) .....	12.8

### DOLLAR

UUNET Tech. ....	18.00	Arbor Software (H) .....	15.50
Security Dynamics Tech. ....	10.13	Hewlett Packard Co. (H) .....	8.75
US Robotics (H) .....	9.50	Discreet Logic Inc. ....	8.25
Iomega Corp. (H) .....	8.63	Computer Sciences .....	5.00
Systemsoft Corp. (H) .....	6.25	Netscape Comm. Corp. ....	4.88
PSINet .....	5.50	Intersolv Inc. ....	4.75
Policy Management Sys. ....	5.25	Centigram Communications .....	4.31
Netcom On-Line .....	5.13	Cognos Inc. (H) .....	4.25

## Industry Almanac

## Greetings from Micrografx

Famous for its legendary chili cook-off at each year's Comdex/Fall, **Micrografx, Inc. (Nasdaq:MGXI)** in Richardson, Texas, aims to become an integral part of all sorts of memorable occasions.

Through a partnership with **American Greetings Corp. (Nasdaq:AGREA)** in Cleveland, Micrografx plans to bring out a product that will allow PC users to create greeting cards and send them over the Internet.

That partnership, along with several other factors, has analysts' hopes high for the stock. Darren vonBehren, technology analyst at ComVest Partners, Inc. in Dallas, rates the stock a buy. The company is undervalued relative to its competitors, trading at twice revenue per share, a much lower multiple than **Macromedia, Inc. (Nasdaq:MACR)** in San Francisco or **Visio Corp. (Nasdaq:VSIO)** in Seattle, which trade at multiples of 10.7 and 8.9, respectively. And the company's partnership with American Greetings and its overall Internet strategy look promising, he says.

American Greetings' Create-A-Card kiosks in retail locations across the country already use Micrografx software. Although details of Micrografx's Internet strategy haven't been released, vonBehren says the company's major product, the ABC Graphics Suite, would make a good front end for viewing and manipulating graphics content over the Internet.

David Hayslip, director of research at Sunpoint Securities, Inc. in Longview, Texas, has had a strong buy on the company since December 1994, when the stock sat at about \$5. He estimates earnings of 60 cents per share for fiscal 1996, which ends in June, and \$1 per share for fiscal 1997. Hayslip's 18-month target price for the stock is \$25 to \$30. — *Tam Harbert*

### Good 'grafx

Micrografx stock could reach \$30 in the next 18 months, according to Sunpoint Securities in Longview, Texas



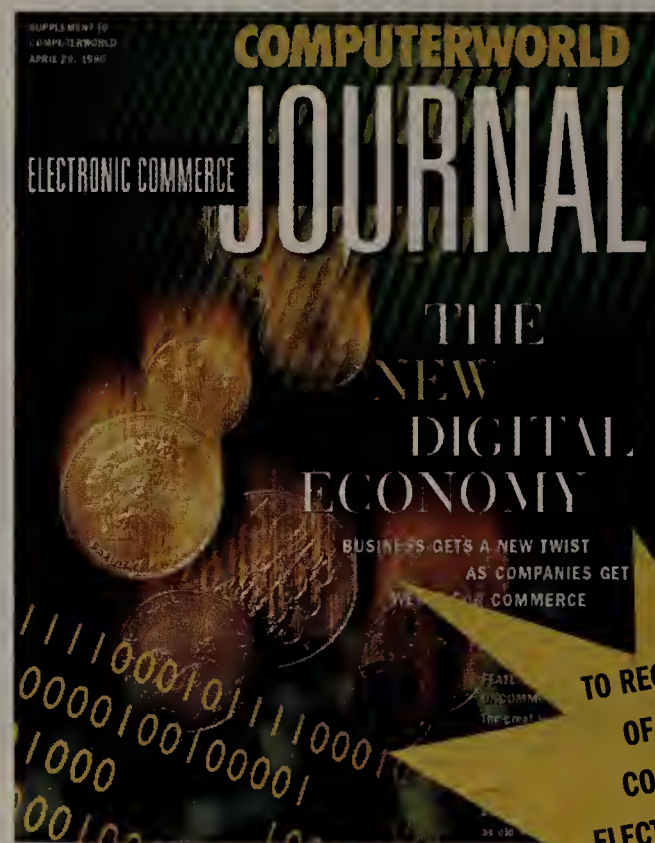
EXCH	52-WEEK RANGE			MAY 3 3PM	Wk NET CHANGE	Wk PCT CHANGE	EXCH	52-WEEK RANGE			MAY 3 3PM	Wk NET CHANGE	Wk PCT CHANGE	
Communications and Network Services							UP 0.83%							
COMS	53.63	26.25	3 COM CORP.	45.63	0.25	0.6	ORCL	36.75	18.75	ORACLE CORP.	32.94	-1.69	-4.9	
AIT	66.88	42.25	AMERITECH CORP.	56.25	-3.00	-5.1	PMT	42.75	20.88	PARAMETRIC TECHNOLOGY (H)	40.00	-1.25	-3.0	
AXE	22.13	15.63	ANIXTER INTL.	18.75	1.88	11.1	PARQ	14.50	6.63	PARCPLACE SYSTEMS INC.	9.13	0.63	7.4	
APTS	15.00	2.75	APERTUS TECH.	4.63	0.63	15.6	PSFT	64.00	24.38	PEOPLESOFT (H)	61.75	1.25	2.1	
T	68.88	49.13	AT & T	59.00	-2.63	-4.3	PTEC	16.75	7.63	PHOENIX TECHNOLOGIES (H)	16.75	0.38	2.3	
ASND	62.38	8.13	ASCEND COMMUNICATIONS (H)	58.25	-2.88	-4.7	PSQL	16.88	3.13	PLATINUM SOFTWARE	9.63	0.13	1.3	
8NYN	18.63	6.00	8ANYAN SYSTEMS INC.	8.38	-0.38	-4.3	PLAT	26.00	11.25	PLATINUM TECHNOLOGY	15.00	-1.38	-8.4	
8AY	50.00	22.88	8AY NETWORKS INC.	32.63	0.25	0.8	PRGS	38.00	14.63	PROGRESS SOFTWARE CORP.	15.63	-2.00	-11.3	
88N	48.75	16.50	88N CORP.	27.75	-0.63	-2.2	RNBO	26.75	16.63	RAINBOW TECHNOLOGIES INC.	20.13	-0.25	-1.2	
8EL	80.38	43.50	8ELL ATLANTIC CORP. (L)	62.50	-3.88	-5.8	ROSS	7.75	2.19	ROSS SYSTEMS	5.00	0.13	2.6	
8LS	45.88	29.13	8ELLSOUTH CORP.	38.88	-1.63	-4.0	SCOC	13.25	5.50	SCO INC.	8.13	0.88	12.1	
8RKT	49.00	9.13	BROOKTROUT TECHNOLOGY (H)	42.50	-0.75	-1.7	SDTI	87.50	16.50	SECURITY DYNAMICS TECH.	87.50	10.13	13.1	
CS	87.75	46.38	CABLETRON SYSTEMS	72.25	-2.38	-3.2	SKEY	51.75	13.38	SOFTKEY INTERNATIONAL INC.	27.88	-1.25	-4.3	
CSCC	101.75	20.38	CASCADE COMMUNICATIONS (H)	101.75	3.13	3.2	SPCO	5.13	2.19	SOFTWARE PUBLISHING CORP.	2.44	-0.31	-11.4	
CGRM	25.13	12.75	CENTIGRAM COMMUNICATIONS	17.56	-4.31	-19.7	SQAX	35.00	16.00	SQA INC. (H)	30.25	-3.00	9.0	
CSCO	52.50	19.25	CISCO SYSTEMS INC. (H)	50.25	-1.88	-3.6	SOTA	15.50	6.63	STATE OF THE ART	15.50	0.63	4.2	
CLIX	11.38	4.50	COMPRESSION LABS INC.	6.63	-0.25	-3.6	SSW	77.88	32.88	STERLING SOFTWARE INC.	76.00	-0.75	-1.0	
CMNT	12.75	4.00	COMPUTER NETWORK TECH.	6.88	0.88	14.6	SDRC	37.38	10.00	STRUCT. DYNAMICS RESEARCH	30.38	-2.38	-7.3	
XCOM	14.50	8.75	CROSSCOMM	10.06	-0.69	-6.4	SYBS	39.75	20.88	SYBASE INC.	25.88	1.25	5.1	
DIGI	64.00	21.88	DSC COMMUNICATIONS	29.38	-2.88	-8.9	SYMC	33.25	9.88	SYMANTEC CORP.	15.88	-1.13	-6.6	
FORE	79.75	25.50	FORE SYSTEMS INC. (H)	77.75	-0.25	-0.3	SNPS	40.50	23.00	SYNOPSYS	40.00	2.00	5.3	
GDC	21.88	9.25	GENERAL DATACOM INDS.	13.75	-0.50	-3.5	SSAX	30.63	12.63	SYSTEM SOFTWARE ASSOC.	23.63	-0.38	-1.6	
GSX	42.50	28.00	GENERAL SIGNAL NETWORKS	39.13	0.88	2.3	SYSF	26.25	8.75	SYSTEMSOFT CORP. (H)	26.25	6.25	31.3	
GTE	49.25	31.88	GTE CORP.	42.38	-2.00	-4.5	TRUV	10.13	4.00	TRUEVISION CORP.	9.00	-0.63	6.5	
LU	35.88	29.75	LUCENT TECH. (H)	33.88	-0.75	-2.2	VIEW	15.75	9.63	VIEWLOGIC SYSTEMS	14.00	-0.25	-1.8	
MCIC	31.13	19.09	MCI COMMUNICATIONS CORP.	28.94	0.00	0.0	VMRK	21.50	5.75	VMARK SOFTWARE INC.	9.38	-0.75	-7.4	
MICM	12.50	5.50	MICOM COMMUNICATIONS CORP.	11.50	3.13	37.3	WALK	12.75	4.63	WALKER INTERACTIVE SYSTEMS	11.25	-0.63	-5.3	
MNPI	34.50	9.13	MICROMIC INC.	23.75	-1.88	-7.3	WALL	23.25	13.00	WALL DATA INC.	18.88	0.38	2.0	
NETM	34.00	9.38	NETMANAGE INC.	14.25	1.25	9.6	WANG	26.13	12.38	WANG LABORATORIES INC. (H)	23.88	-0.50	-2.1	
NTRX	8.75	3.63	NETRIX CORP.	7.75	1.13	17.0	Internet							UP 7.80%
NCDI	12.00	2.88	NETWORK COMPUTING DEVICES	3.00	0.00	0.0	AMER	68.13	16.75	AMERICA ON-LINE (H)	62.25	-4.13	-6.2	
NWK	42.00	20.38	NETWORK EQUIPMENT TECH.	25.75	-1.13	-4.2	CSRV	35.50	26.50	COMPUSERVE CORP. (L)	26.50	-3.88	-12.8	
NETG	46.50	22.75	NETWORK GENERAL	41.00	0.00	0.0	LCOS	29.25	14.00	LYCOS INC.	16.50	-1.63	-9.0	
NN	66.75	25.00	NEWBRIDGE NETWORKS CORP.	66.75	2.88	4.5	NETC	91.50	19.22	NETCOM ON-LINE	38.50	5.13	15.4	
NT	52.50	31.50	NORTHERN TELECOM LTD.	51.38	-0.25	-0.5	NSCP	87.00	22.88	NETSCAPE COMM. CORP.	56.63	-4.88	-7.9	
NOVL	23.25	11.38	NOVELL INC.	14.19	1.19	9.1	PSIX	29.00	6.75	PSINET	17.00	5.50	47.8	
NYN	59.25	39.25	NYNEX CORP.	47.50	-2.50	-5.0	QDEK	39.50	6.44	QUARTEROECK CORP.	15.13	-0.88	-5.5	
OCTL	50.50	21.00	OCTEL COMMUNICATIONS CORP.	42.00	-3.75	-8.2	SPYG	61.00	13.25	SPYGLASS INC.	31.25	4.13	15.2	
ODSI	43.25	17.00	OPTICAL DATA SYSTEMS INC.	24.75	0.00	0.0	UUNT	98.75	21.75	UUNET TECH.	62.00	18.00	40.9	
PCTL	44.72	20.75	PICTURETEL CORP.	33.75	-1.63	-4.6	YHOO	43.00	24.50	YAHOO! INC.	32.00	0.00	0.0	
PTON	10.75	4.75	PROTEON INC.	5.63	0.13	2.3	Semiconductors							UP 1.09%
RACO	7.88	3.88	RACOTEK INC.	5.63	1.13	25.0	AMD	39.25	16.13	ADVANCED MICRO DEVICES	19.50	0.75	4.0	
RETX	9.38	1.81	RETX (H)	9.00	0.38	4.3	ADI	30.13	17.13	ANALOG DEVICES INC.	27.75	1.13	4.2	
SFA	24.63	11.38	SCIENTIFIC ATLANTA INC.	18.25	-1.38	-7.0	CHPS	15.88	7.88	CHIPS AND TECHNOLOGIES	11.75	0.88	8.0	
SHVA	64.50	17.88	SHIVA CORP.	58.25	-3.25	-5.3	CRUS	61.13	17.00	CIRRUS LOGIC	21.88	-0.50	-2.2	
SBC	60.25	42.63	SOUTHWESTERN BELL CORP.	49.63	-0.63	-1.2	CY	27.75	10.00	CYPRESS SEMICONDUCTOR CORP.	14.00	-0.75	-5.1	
FON	45.50	29.25	SPRINT CORP.	41.75	-0.25	-0.6	CYRX	49.75	18.25	CYRIX	28.75	-3.25	-10.2	
SMSC	23.50	12.50	STANDARD MICROSYSTEMS CORP.	16.88	0.75	4.7	INTC	78.38	49.75	INTEL CORP.	68.38	-1.38	-2.0	
STRM	52.50	17.25	STRATACOM INC. (H)	51.00	-1.00	-1.9	LSI	62.50	22.50	LSI LOGIC CORP.	36.25	-0.75	-2.0	
TBIT	8.63	2.38	TELEBIT CORP.	7.88	0.56	7.7	LSCC	43.00	26.38	LATTICE SEMICONDUCTOR	33.75	0.50	1.5	
USRX	159.75	36.13	US ROBOTICS (H)	159.75	9.50	6.3	MCRL	32.50	12.25	MICREL SEMICONDUCTOR INC.	15.75	-0.50	-3.1	
USW	48.38	28.38	US WEST INC.	32.50	-0.50	-1.5	MU	94.75	27.50	MICRON TECHNOLOGY	36.63	-1.63	-4.2	
XIRC	16.50	8.88	XIRCORP (H)	16.50	1.25	8.2	MOT	82.50	44.75	MOTOROLA INC.	62.00	-1.00	-1.6	
XYLN	73.50	51.25	XYLAN CORP.	63.50	-2.50	-3.8	NSM	33.63	13.50	NATIONAL SEMICONDUCTOR	16.13	0.00	0.0	
PCs and Workstations							OFF 0.00%							
AALR	9.63	5.00	ADVANCED LOGIC RESEARCH	7.50	0.13	1.7	SERA	28.75	9.75	SIERRA SEMICONDUCTOR	15.81	-1.69	-9.6	
AAPL	50.13	23.00	APPLE COMPUTER INC.	23.50	-1.25	-5.1	TXN	83.75	42.75	SIXA INSTRUMENTS	56.50	-1.50	-2.6	
ASTA	19.13	4.63	AST RESEARCH INC.	6.75	-1.00	-12.9	TXCC	17.13	7.88	TRANSWITCH CORP.	17.13	4.38	34.3	
CPQ	56.75	35.63	COMPAQ COMPUTER CORP.	47.13	1.50	3.3	VLSI	39.13	10.75	VLSI TECHNOLOGY	17.75	-0.13	-0.7	
DELL	49.38	23.00	DELL COMPUTER CORP.	45.25	1.25	2.8	WWTK	6.88	1.00	WEITEK	1.50	0.13	9.1	
GATE	40.75	17.38	GATEWAY 2000 INC. (H)	34.88	-1.56	-4.3	WDC	24.75	14.38	WESTERN DIGITAL CORP. (H)	24.75	2.38	10.6	
HWP	112.38	63.75	HEWLETT PACKARD CO. (H)	102.50	-8.75	-7.9	XLNX	55.50	23.25	XILINX	35.63	-1.88	-5.0	
MUEI	29.88	9.00	MICRON INTERNATIONAL INC.	13.50	0.50	3.8	ZLG	54.13	28.50	ZILOG INC.	37.63	-0.25	-0.7	
NIPNY	75.13	51.00	NEC AMERICA	63.38	-0.75	-1.2	Peripherals and Subsystems							UP 2.93%
SGI	45.63	21.13	SILICON GRAPHICS	28.25	-1.38	-4.6	APCC	25.88	7.88	AMERICAN POWER CONVERSION	12.50	-0.88	-6.5	
SUNW	57.50	19.38	SUN MICROSYSTEMS INC.	57.50	3.00	5.5	ADPT	61.00	29.25	ADAPTEC INC. (H)	58.13	-0.75	-1.3	
Large Systems							UP 0.72%							
AMH	13.63	6.75	AMDAHL CORP.	11.88	-0.88	-6.9	CBEX	13.13	5.00	CAMBEX CORP.	5.75	0.38	7.0	
CYR	29.75	19.00	CRAY RESEARCH INC. (H)	28.25	-1.25	-4.2	CGN	7.25	3.06	COGNITRONICS CORP.	4.88	0.00	0.0	
DGN	19.13	7.13	DATA GENERAL CORP.	14.88	-1.13	-7.0	CREAF	14.13	5.75	CREATIVE TECHNOLOGIES INC.	7.00	0.13	1.8	
DEC	76.50	35.13	DIGITAL EQUIPMENT CORP.	56.63	-3.38	-5.6	RACE	13.13	3.63	DATA RACE INC.	4.88	0.25	5.4	
IBM	128.88	83.13	IBM	107.88	-0.50	-0.5	DTM	9.38	4.13	DATARAM CORP.	6.44	1.19	22.6	
MDCD	18.50	3.00	MERIDIAN DATA INC. (H)	17.25	-0.13	-0.7	EMC	27.38	13.00	EMCCORP.	20.38	0.88	4.5	
NETF	7.50	3.88	NETFRAME	4.38	0.06	1.4	EMUL	28.50	6.38	EMULEX CORP.	17.00	-0.38	-2.2	
SQNT	25.38	10.13	SEQUENT COMPUTER SYS.	13.88	-1.00	-6.7	ESCC	29.00	13.00	EVANS AND SUTHERLAND (H)	26.06	-2.19	-7.7	
SEQS	10.00	2.88	SEQUOIA SYSTEMS INC.	4.00	0.88	28.0	EXBT	18.94	10.00	EXABYTE	18.94	2.19	13.1	
SRA	36.13	23.00	STRATUS COMPUTER INC.	27.88	-0.50	-1.8	IISLF	4.25	1.50	INTELLIGENT INFO. SYSTEMS	2.00	-0.38	-15.8	
TDM	17.50	8.38	TANDEM COMPUTERS INC.	13.00	0.25	2.0	IOMG	58.88	3.25	IOMEGA CORP. (H)	58.88	8.63	17.2	
TRCD	5.75	2.00	TRICORO SYSTEMS	4.88	0.50	11.4	IPLSA	7.88	2.50	IPL SYSTEMS INC.	6.50	0.13	2.0	
UIS	13.63	5.50	UNISYS CORP.	6.13	0.00	0.0	KMAG	37.50	18.75	KOMAG INC.	33.00	1.00	3.1	
Software							OFF 1.78%							
ADBE	74.25	30.00	ADOBE SYSTEMS INC.	41.13	-1.38	-3.2	MTSI	37.75	11.25	MICRO TOUCH SYSTEMS INC.	19.13	2.50	15.0	
AMSWA	8.75	3.50	AMERICAN SOFTWARE INC.	5.38	0.13	2.4	PEAK	34.75	16.75	PEAK TECHNOLOGY GROUP	24.00	0.25	1.1	
APLX	42.50	8.25	APPLIX INC.	34.63	-2.63	-7.0	PNCI	19.75	5.88	PINNACLE MICRO INC.	10.25	0.50	5.1	
ARSW	82.75	28.75	ARBOR SOFTWARE (H)	63.00	-15.50	-19.7	PTNX	38.75	13.50	PRINTRONIX INC.	20.25	-0.25	-1.2	
ACAD	53.00	27.75	AUTODESK INC.	42.00	0.00	0.0	AQM	6.38	3.25	QMS INC.	6.00	0.13	2.1	
8ACH	11.88	4.63	8ACHMAN INFO. SYSTEMS	9.13	-0.25	-2.7	QNTM	28.50	15.88	QUANTUM CORP.	22.13	0.88	4.1	
8GSS	42.00	28.50	8GS SYSTEMS INC.	32.25	2.25	7.5	RDUS	14.00	0.94	RADIUS INC.	3.56	0.38	11.8	
8MCS	64.25	28.38	8MC SOFTWARE INC. (H)	61.75	0.50	0.8	SEG	67.05	30.25	SEAGATE TECHNOLOGY	57.13	1.00	1.8	
8OOL	26.38	18.88	8OOLE AND 8ABBAGE	25.50	1.00	4.1	STK	32.50	20.00	STORAGE TECHNOLOGY (H)	29.88	-1.00	3.2	
8ORL	21.25	8.75	8ORLAND INT'L INC.	16.00	-0.94	-5.5	STLC	7.50						



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We invite our readers to call or write with comments and ideas. It is best to submit ideas to one of the department editors as well as to the appropriate beat reporter.

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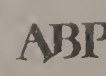
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# Novell directory too late to play in big time

.....  
Charles Babcock

Novell is attempting to shore up its future by making Novell Directory Services, formerly NetWare Directory Services, a widely used industry standard.

But there's a lot of work to do. By the time Novell gets NDS ready for Windows NT and Unix, the world will have changed so much that NDS will fill only a legacy role.

Not that there's anything wrong with NDS. On the contrary, it's a highly underrated piece of software. It would be better known and more highly regarded if it weren't that Novell's own marketing and strategic disarray keep stealing the limelight.

Novell plans to port NDS to run natively under Windows NT and the major Unixes. This is a good idea whose time has come — and gone. It would have meant something two years ago, when NetWare 4.0 emerged, if Novell had committed itself to offer superior directory services on other systems. Now, the first port to NT won't be available until the first half of 1997, and the Unix ports

will come later.

A more universal NDS will still be an attractive alternative to the directories on Microsoft's NT, IBM's OS/2 Warp Server, Sun's Solaris, HP's HP-UX or SCO's UnixWare, and NDS may enjoy a small measure of success in 1998-99.

But, at heart, this is a if-you-can't-beat-'em, join-'em line of attack on the competition. Novell has obviously concluded that Windows NT will be established as a widespread system and will take a bite out of Novell's LAN turf. Rather than sit petulantly on the sidelines, it has decided to split out its most competitive product, promote it and try to share in the success.

Likewise with Unix, Novell tried to sell UnixWare to a mass market and failed. Instead of walking away from Unix users, it would like a second chance to sell them directory services.

I think both Unix and Windows NT have a great future, and much of today's LAN environment will



## The Meta View

NDS for Windows NT and the major Unixes... is a good idea whose time has come — and gone.

be reorganized around TCP/IP and those two systems. Such a simplifying process will lay the groundwork for corporate intranets. Intranets will represent a radically different environment from today's mishmash of LANs, servers and desktops that passes for client/server computing. Indeed, if Novell succeeds in splitting NDS out of NetWare, its main role may be to serve as the directory for this residual thicket, as something more important takes shape around it.

On tomorrow's intranet, however, there will be little room for auxiliary players. An intranet is predicated on a few open standards that rule the environment and open channels of communica-

tion through a common user interface.

Novell's NDS does a good job of administering today's NetWare and could administer Windows NT and OS/2 Warp Server LANs. But the PC LAN will be replaced by something more scalable,

manageable and connected to the Internet. And a new force in directory services emerged April 22 when Netscape Communications in Mountain View, Calif., supplier of the Internet's Navigator browser, lined up behind the Lightweight Directory Access Protocol (LDAP).

LDAP eliminates the need for a bulky, comprehensive directory. LDAP presumes the network is based on the Internet Protocol, or IP, which eliminates the need for the many other networking protocols that are encapsulated in the X.500 standard.

Clients and servers in the future will include LDAP support. That means clients will have an easier job finding a directory and

using its naming and locating services. LDAP was derived from research by the Internet Engineering Task Force and work at the University of Michigan to find a way to provide common directory services to thousands of users on an IP net. X.500 theoretically was the answer years ago, but it couldn't presume a single net. And it's so big, it can't sit on a desktop client.

The emerging intranet, like the Internet, can presume that single protocol (IP). The LDAP work specifies a stripped-down approach on how clients access IP directories. Indeed, the need for a lighter-weight specification was so obvious that Novell was among the 40 companies to promise LDAP support.

So NDS will play a role in this emerging environment, but it is an auxiliary and a legacy role. What Novell needs more than anything else is a primary task that it can fulfill in this shifting, client world, and it's still looking for it.

Babcock is *Computerworld's* technical editor. His Internet address is [charles\\_babcock@cw.com](mailto:charles_babcock@cw.com).

## Inside Lines

### Bay powers up System 5000 hub

Bay Networks this week will announce six switching products, including Token Ring and Fiber Distributed Data Interface switching for the high-end System 5000 hub. The System 5000 currently supports only Ethernet and Fast Ethernet switching modules.

### Middleware makers make up

IBM and Iona Technologies haven't always been the best of friends in object-middleware industry battles. But at the Object World trade show this week in Boston, the two companies are expected to announce a strategic alliance that will link Boston-based Iona's Orbix with IBM's System Object Model (SOM). Orbix and SOM match the Object Management Group's Common Object Request Broker Architecture. The deal should make it easier for SOM to connect to non-IBM platforms — and Iona to connect with large customers.

### Adobe builds links to Netscape

Adobe Systems on Tuesday will announce a technology agreement with Netscape designed to stabilize Hypertext Markup Language information that is sent from World Wide Web browsers to printers, *Computerworld* has learned.

### Save the sales

The National Weather Service plans to do targeted forecasts for the 34 athletic venues at the upcoming Olympic Games in Atlanta, using a loaned IBM parallel processor and Hewlett-Packard workstations. Why bother with the

indoor facilities, which probably don't have much to fear from the elements? Lans Rothfusz, the lead meteorologist for the Games, noted that the indoor venues will be surrounded by tents where vendors will hawk food and Olympic merchandise. And we don't want those overpriced souvenir T-shirts to pick up any water damage, now do we?

### Power drain?

The Electronic Messaging Association (EMA) promotes its membership as the "Power 1000." There's one hitch: There are only 534 members, acknowledged EMA Chairman Steven Mahaney during the group's annual confer-

ence in Anaheim, Calif., last week. With the growth the association is experiencing, it should reach 1,000 members in the near future, he predicted.

### Check the documentation

Lotus Notes users who are tired of the loud beep their PCs make when a new electronic-mail message is received can try a fix suggested by a user on a CompuServe discussion forum. "Remove the screws from the back of the PC and take off the cover. Locate the small PC speaker. Stab it six or eight times with your screwdriver, until it is shredded and the wires are dangling loose. Replace the cover. Simple!"

### Faster Ethernet analysis

Start-up Shomiti Systems in San Jose, Calif., next week will introduce a protocol analyzer that will let troubleshooters capture and decode Ethernet packets at high speeds on switched segments, even in full-duplex (two-way) mode. The Century LAN Analyzer software runs on any Windows PC and will cost \$499.

A small Web software maker called PrivNet last week quietly started testing a plug-in for Netscape's Navigator browser that automatically blocks ads from your view of the Web pages you visit. The product, *Internet Fast Forward*, can filter out any graphics bigger than a predefined size. The goal is to get the Web moving faster, according to the vendor's Web site (<http://privnet.com>). But some 'net users don't see it that way. "What's going to happen to the Web down the road if cool new sites aren't funded [with ads]?" wondered one IS pro. Hmmm. Good question. Tell news editor Patricia Keefe what you think about the Web's future, or any other industry debates, at (508) 820-8183 or via the Internet at [patricia\\_keefe@cw.com](mailto:patricia_keefe@cw.com).

## The 5th Wave by Rich Tennant





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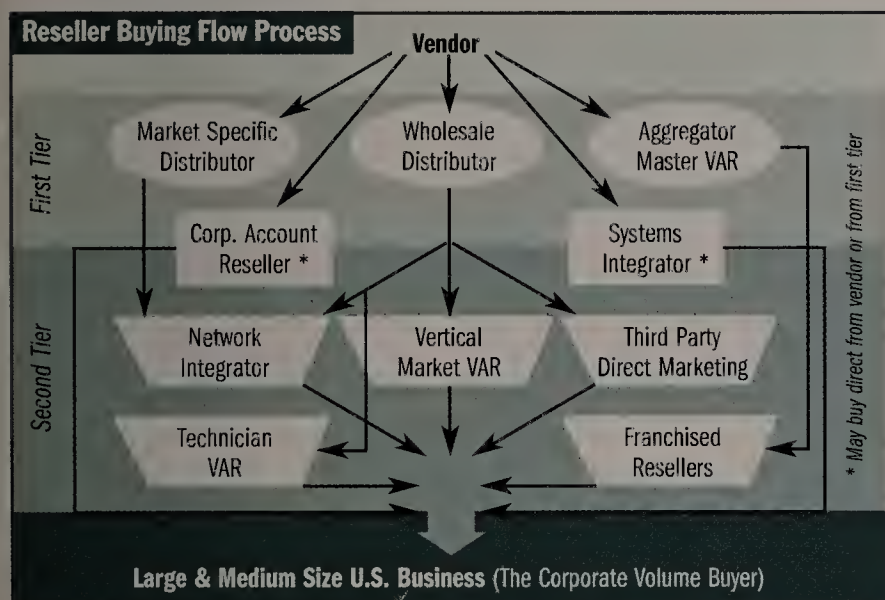
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